

Issued Every Month

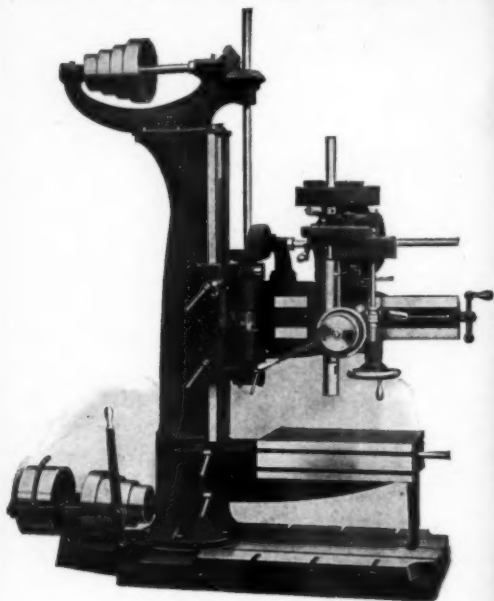
For Free Distribution to Users
of Machine Tools

HITCHCOCK'S MACHINE TOOL LIST

A Reference Book for Buyers
of Iron Working Machinery

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

New 2½-ft. Fosdick National Radial Drill



All gears covered. Geared feed. Direct reading feed dial. Automatic safety stop. New quick advance and return friction. Steel gears in all important places. Power elevating and lowering device. Back gears located on head. Ball bearing thrust washers under spindle. No countershaft required.

*Write for descriptive matter and information concerning
all of the features of this machine*

The Fosdick Machine Tool Co.
Cincinnati, Ohio

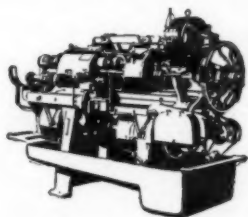
Drill

F

feed
return
vating
bear-
quired.

Co.

THE EXTRA CUT



AND ITS COST

Do your screw machines do the work of second operation machines? The Acme Automatic completes pieces requiring side and end milling, side drilling and accelerated reaming cuts, and saves the time and expense of re-handling.

The Acme Automatic operates eight tools on four bars of stock; and finishes the piece in the time of one operation or less.

By this method production is increased 50 to 200% over ordinary methods.

*The book—"One Thing at a Time
vs the Acme Way"—tells you how.*

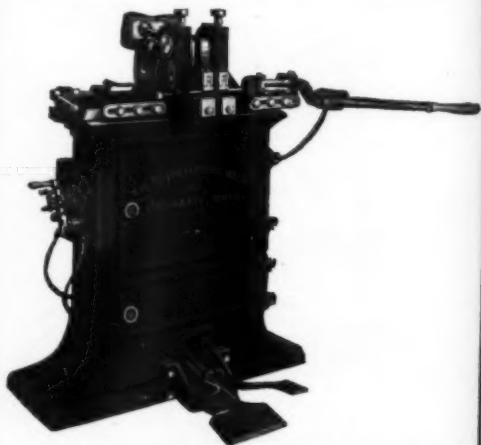
The National-Acme Mfg. Co.

CLEVELAND, SIXTH CITY

New York Boston Chicago
Detroit Montreal Atlanta

It's An Electric Welder!

Welds Iron or Steel up to $\frac{3}{4}$ -inch
Welds Brass, Copper or Aluminum Rods



5-16 in. Automobile Brake Rods welded at the rate of
5,000 per day

Better work and fifty times faster than fire welds. But it's a quantity and quality proposition. This is only one kind of welder; we make over 60 different kinds: special machines for any kind of welding in quantities. Our free Bulletin No. 11 tells about them. **Spot Welding** to take the place of riveting is another story: it's well told in our No. 12 Bulletin. It's also free.

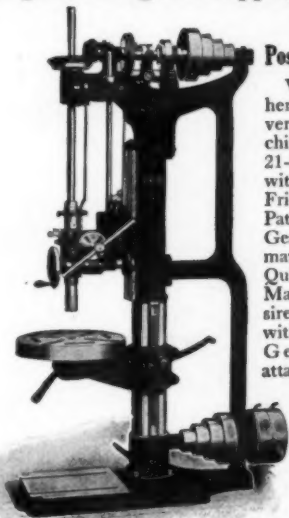
No Lease No License No Royalty

Toledo Electric Welder Co.
Station A, Cincinnati, Ohio

The Cincinnati

Heavy Pattern Sliding Head

Upright Drilling and Tapping Machines



With Patent Positive Geared Feed

We illustrate herewith one of our very latest machines, namely, our 21-inch Drill, fitted with Sliding Head, Friction Back Gear, Patent Positive Geared Feed, Automatic Stop and Quick return. This Machine can, if desired, be supplied with our Patent Geared Tapping attachment, Square

Table, Motor Drive, either belted or geared, arranged in gangs, or furnished with drilling plates, drill chucks, or vises, as

may be called for. These machines range in sizes from 20 to 42-inch, and are made in two distinct styles, one for the use of the ordinary drill, the other strictly for high speed drilling purposes.

The 1912 catalogue is ready for distribution

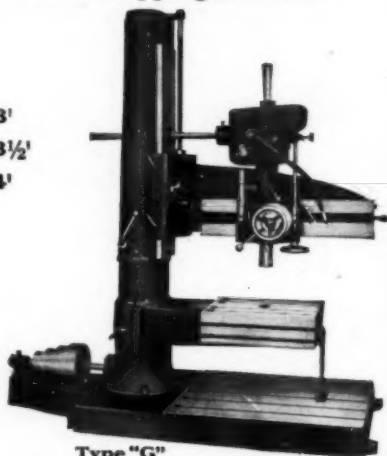
The Cincinnati Bickford Tool Co.
Oakley, Cincinnati, Ohio

A Simple, Rigid, Durable, Powerful

Improved Radial Drill

And Tapping Machine

3'
3½'
4'



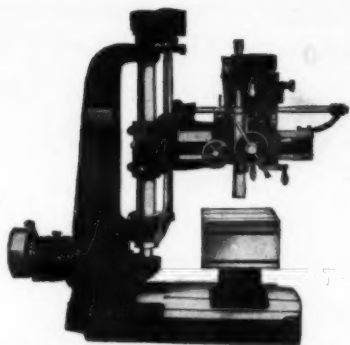
Type "G"

This strictly modern tool is provided with powerful friction clutches and handles very heavy tapping.

The single-lever spindle control, the improved spindle drive, four rates of speed for each drilling speed, 12 spindle speeds when furnished with speed box, the depth gage and automatic stop, built-in design for protecting gears—these are pertinent pointers that indicate the care with which every detail has been worked out to the best advantage of the user.

Write for Catalog, showing different types of Radials, including our famous "Speedy-Belted-Sensitive."

The William E. Gang Co.
Cincinnati, Ohio



The Morris Plain Radial Drill

Has been giving universal satisfaction for a good many years.

Note that the column and base are cast in one piece, insuring absolute rigidity.

Furnished with speed box drive, as shown, or cone drive, or can be arranged for motor drive.

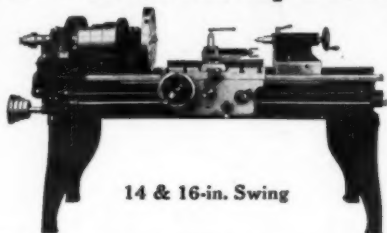
Made in three sizes, 2-1/2 ft., 3 ft. and 3-1/2 ft.

The price is a very attractive feature of this machine, and if you want a good, rigid, reliable tool at a saving cost, write for our proposition.

The John B. Morris Machine Tool Co.
Cincinnati, Ohio

Makers also of the MORRIS Engine Lathes

Conover-Overkamp Lathes



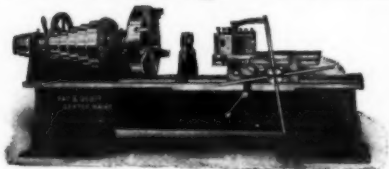
14 & 16-in. Swing

The Lathes of **strength—simplicity—accuracy**. No complications to add to their selling cost or to their cost of operation. They are sensible, well-made tools.

Easy to operate, easy to buy. For particulars, write

The Conover-Overkamp Machine & Tool Co.
840 Germantown St., Dayton, Ohio, U. S. A.

Chucking Lathes



Fay & Scott's Plain Turret

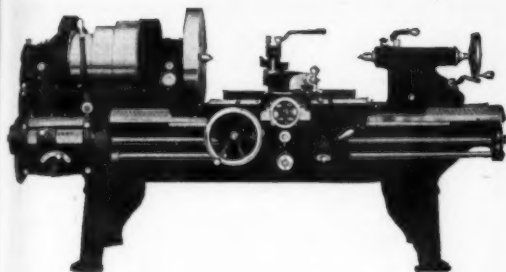
16, 18, 20, 24, 28 and 32 inches.

These are capacity machines, designed with special reference to handling quickly, and with high economy, all work that is adapted to a tool of this type. We put the highest grade material and workmanship into them, and guarantee them equal to the heaviest duty. Undoubtedly the most convenient and dependable plain turret chucking lathe in market.

Let us describe it fully

FAY & SCOTT, - Dexter, Maine

Makers of Engine, Extension Gap and Pattern Makers' Lathes, Special Turrets, Planer Centers, Tool Posts, etc.



Cost Reducing Features

Headstock

Hardened steel spindle running in a close grained cast iron box, cast integral with the headstock. Large cone diameter—high belt speed—perfect lubricating facilities.

Patent double friction back gears, giving a choice of 4-speeds for roughing and finishing cuts without stopping the lathe.

Bed

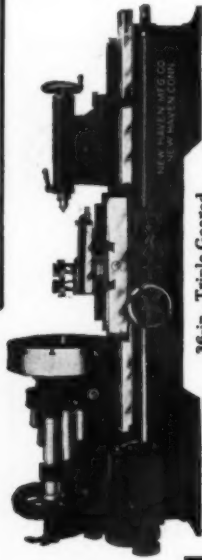
Patent form of compensating Vee, that compensates directly in line with the tool thrust and presents a bearing at 90 degrees to the lines of greatest force.

Carriage—Apron

A compound rest that shows no interference while handling the full swing of the lathe. Interlocking devices that prevent the engaging of any two conflicting feeds. A one-piece apron with no overhung gears or studs, no loose brackets in the support of the mechanism.

Write for production guarantee

The R. K. LeBlond M. T. Co.
Cincinnati, Ohio



36-in., Triple Geared

You don't buy a lathe for its novelty or originality, but for the work it will do under average conditions in your own factory or shop.

What Makes The New Haven A Practical Shop Tool

is its exceptional power, combined with an equally exceptional capacity to turn out work. Power means something more than a wide belt; it means ability to drive the work against the tool with maximum speed and feed. And so the capacity of a lathe is not measured by its swing, but by its ability to do the largest possible amount of accurate turning at a low cost. Sixty years of continuous lathe making count in putting these practical, service giving qualities into a machine. They have enabled us to eliminate the weak points and to develop the strong ones, until, as it stands to-day, the New Haven Lathe is without a superior, if not indeed without an equal, among highly effective metal cutting tools. It has no "talking" points; they are all **working** points—points making for greater production and greater economy per machine unit and per man unit.

Put your lathe problem up to our Mechanical Engineering Department. We maintain it to help lathe users get results.

WRITE for information; we have a lot of it about lathes, all worth having and freely at your service.

New Haven Manufacturing Co., - New Haven, Conn.



Among buyers
and operators

Cincinnati Lathes

receive a royal welcome, because they know their merit. Our machines give the longest satisfactory wear. With our **Quick Change Feed Box**, the standard changes are made from one to another at once, while lathe is operating, by simply shifting a lever.

The Cincinnati Lathe & Tool Co.
Oakley, Cincinnati, Ohio



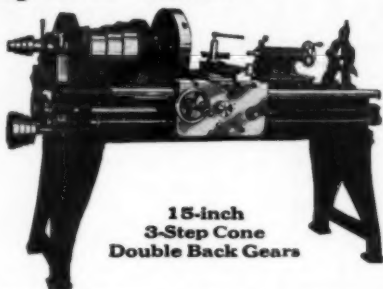
Champion Lathes

Install one now and watch it take care of every job within its range. Just the lathe for general shop work. It has all the practical conveniences and is easily handled.

Get our Catalogue of 10, 12, 14, 16 and 18-inch Engine Lathes, Quick Change or New Standard Pattern, all attachments, and Motor or Countershaft Drive.

Champion Tool Works Co.
2426 Spring Grove Ave., Cincinnati, Ohio, U. S. A.

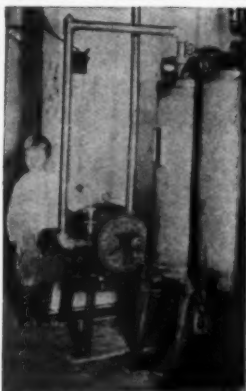
Duplicate Orders



**15-inch
3-Step Cone
Double Back Gears**

UNSOLICITED duplicate orders from critical users tells a story of satisfaction with both quality and price. Let us mail you facts and figures and refer you to users.

VON WYCK MACHINE TOOL CO., - Cincinnati, O.



Blower Cat. No. 26
Vacuum Cat. No. 27

LEIMAN BROS. VACUUM

PUMPS For Powerful
2 to 4 Sweeper

Vacuum Cleaning
Outfits—2 to 338 Cubic feet
They take up their own wear
Can't get out of order

Also used for blowing



INTERIOR VIEW

LEIMAN BROS. 62 R John St.,
New York

Important

On Lot 10 of Our

CISCO

14-inch Lathe

We will have several improvements

Changing Gear Box

Making 44 threads instead of 33

Hand Wheels

On tail stock and apron in place of
bull cranks

Widened Stop Slide

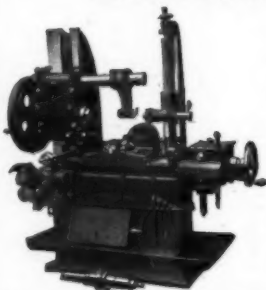
And several other changes

Best Lathe Made for the Money

The Cincinnati Iron & Steel Co.

Cincinnati, Ohio

Newark Gear Cutting Machines Are Entirely Automatic



They are manufacturing tools, made in all sizes, for cutting gears for all purposes.

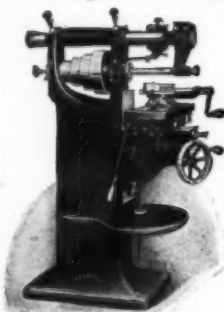
They have accurate indexing mechanism, with safety stop.

Simple in construction, positive in operation.

Write for 1912 Catalog

Newark Gear Cutting Machine Co.
69 Prospect St., Newark, N. J.

A "Steptoe" Hand Milling Machine

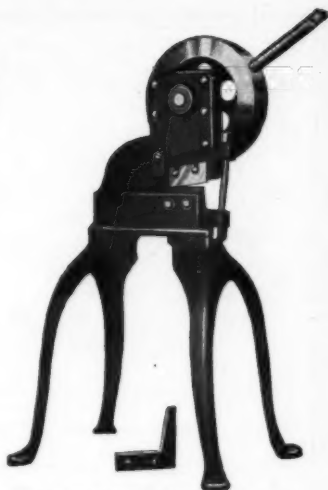


will do your small parts quicker than they can be done on any other machine, and do them accurately. This machine is especially adapted to automobile garages, technical schools, typewriter, gun, sewing machine and cash register factories and shops where keyseating shafts is necessary.

We manufacture these machines with screw and lever feed to the knee, or power, screw, or hand feed to the table.

The John Steptoe Shaper Co.
Station B, Cincinnati, Ohio

**Whitcomb
No. 2
Hand
and
Power
Shears**



Five Sizes, Capacity $\frac{1}{8}$ to $\frac{3}{8}$ -inch Steel

A fly wheel pulley keyed to the eccentric shaft in place of the usual lever socket, enables the shear to be operated continuously with a belt for light, rapid cutting-off, or by hand with the lever shown. Requires no adjustment in changing from one to the other.

Bodies of semi-steel, cast in our own foundry; workmanship the same as we put on high-grade machine tools; we guarantee them in every way.

Punches and Shears have lately been added to our regular line of

Lathes and Planers

Widely Known for the Excellence of Their Design and Construction

**Whitcomb-Blaisdell Machine Tool Co.
Worcester, Mass.**

It's New and Smaller
Burke's Bench Miller No. 0



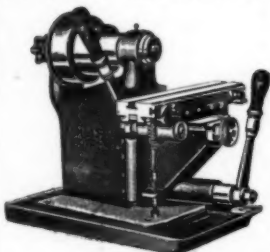
Longitudinal feed, 4 in.; traverse feed, 1½ in.; vertical motion to knee, 3½ in.; maximum distance between center of spindle and table, 4 in.; table surface, 3x9 in.

Just the thing for small work. Finished, fitted and tested with the same extreme care as our larger Bench Millers, and sold at a very close price. You can't beat it; it's a Burke.

Write for description and prices, and consult with us about your milling requirements. We are at your service.

The Burke Machine Tool Co.
Conneaut, O.

Just The Machine



for those light cuts on details for Firearms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

The Carter & Hakes Co.
West Winsted, Conn., U. S. A.

AGENTS—Marshall & Huschart Mchry. Co., Chicago, St. Louis, Indianapolis; Motch & Merryweather Mchry. Co., Cleveland, Detroit, Cincinnati, Pittsburg.

High
Character
Sterling Worth

Uniform
Reliability

Are terms truthfully applied to the

Productions

of

The American Tool & Machine Co.

(Incorporated 1864)

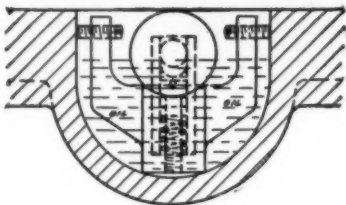
Boston

Lathes for all kinds of brass finishing and light iron work—doing good service after 40 yrs.' use

Oil Separators a shop economy of 40 years' standing

Waste Washing Machines never found among second-hand appliances

Wet Grinders a new and desirable tool



Four oil wells keep ram ways flushed with oil on our 18-inch Single pulley (Gear Box) Shaper. This is only one of the many special features of Stockbridge construction that make for long life and small up-keep expense. A Shaper made a little better than it has to be.

Stockbridge Machine Co.
Worcester, Mass.



Beaudry Champion Power Hammers

Occupy small floor space;
will handle varying thick-
nesses of stock without re-
adjusting; quick and direct
acting and always under
perfect control.

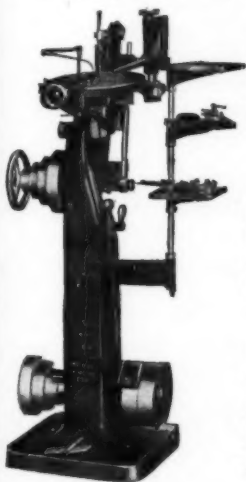
*New Catalogue just out
Ask for it*

Beaudry & Co., Inc.
Oliver Bldg. Boston, Mass.

Much Hand Work Saved

By the Cochrane-Bly Filing Machine

AFTER SEVERAL YEARS of study and experimenting we perfected this great labor saver. It does



excellent work on dies, metal patterns, jigs, and in finishing small tools. The filing is more accurate than that done by hand.

The work may be fed to the files by means of a screw feed. Using hack saws, dies may be sawed out, leaving but little filing to finish.

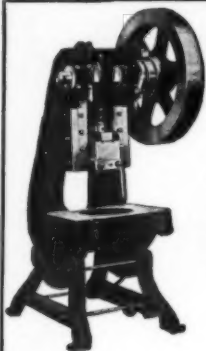
Hundreds of well known manufacturers are operating our Filing Machines, and a number of them have several; Uncle Sam uses them in his arsenals.

Send for booklet and see how well you could use this modern cost reducer

Cochrane-Bly Company

Rochester, N. Y., U. S. A.

Also Cold Saws and Automatic Cold Saw Sharpeners



A Lazy Man

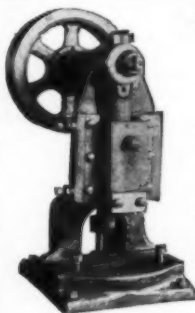
is of no more use than a dead one and takes up more room. Same way with some machines.

Let us show you how

HIGH DUTY
ROCKFORD
PUNCH PRESSES

will liven up your
press work.

Rockford Iron Works
Rockford, Ill.



Being Satisfied

with what you *SELL* is more
important than being satis-
fied with what you *BUY*

We Propose Selling You

We know the requirements
of the punch press business,
know what the operator needs
and we know what the man who
pays the bill needs—

You will be satisfied

Enquire about our line of Presses

The Etna Machine Co.
Toledo, Ohio



Get A

"D. T. D."

Set it to work in your shop. Put it up against the toughest job you have. Thereafter you'll always specify

"Detroit" Twist Drills

They have been on the market for 26 years and are guaranteed to give the kind of service which results in re-orders.

For the hard job—the work that demands endurance, a steady cut and ability to stand high speeds—get **"Detroit" Drills** and other small tools.

Ask your Dealer for them—or write us direct. We'll reply by return mail and send you Catalog "J" for the asking.

Detroit Twist Drill Co.

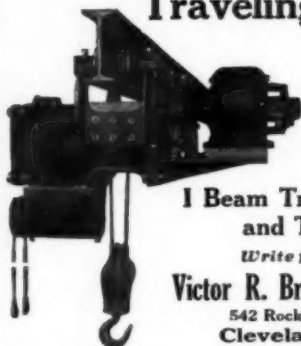
510-522 Fort St., Detroit, Michigan

CHICAGO
1926 Wabash Ave.

NEW YORK
30 Church Street



Electric Hoists Traveling Cranes



of all types
for
all purposes

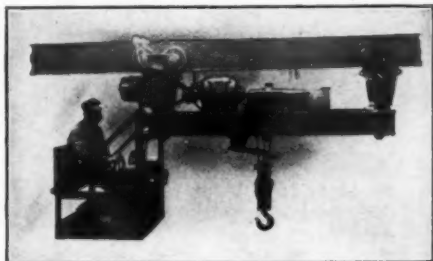
**I Beam Track Systems
and Trolleys**

Write for prices

Victor R. Browning & Co.

542 Rockefeller Bldg.
Cleveland, Ohio

Mono Rail Hoists and Over Head Track Systems



A 5-ton hoist operated from cab or floor for transferring material from one building to another, unloading cars, general yard work, etc.
Mono Rail Hoists and trolleys of all types.
Nothing too large or too small for our careful, prompt attention.

The Euclid Crane & Hoist Company
Euclid, Ohio

YOU Must Be Pretty Flush

Don't care for expenses

or you've been playing "Rip Van Winkle," because you haven't asked us for prices on the "**Handiest Tool in the Shop,**" a tool that



**Will
Save
You
Money
Time
Labor
Drudgery
and
Accidents**

LOOK at it lifting that casting on to the Planer. Would lift the Planer if necessary. Does a tool that will lift all your heavy work, and **let down** the cost for doing it, interest **you**? If so,

Write to

**The Canton Foundry & Machine Co.
Canton, Ohio**



***In Its Larger Capacity
Greater Durability and
Diminished Fire Risk***

Steel Equipment Pays Good Dividends

Erected by the Terrill Unit System, steel shelves, stock bins, lockers, etc., last for many years, because changes in arrangement, increases and decreases, are easily effected without in any way injuring the equipment. With slight trouble your whole storage plant may be changed about in any way desired without damage to any of it. Apart from the danger, wood will cost more in the long run, and will never give you the satisfaction and security of steel. Better change before the wood becomes ashes and charcoal.

There is not so much difference in cost as you think. Let us submit some figures.

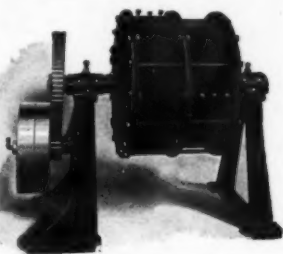
Terrell's Equipment Co.

Hall & Division Sts., Grand Rapids, Mich.

\$5⁰⁰ Worth of Burnishing For One Cent

A large typewriter factory now burnishes **50,000 pieces**, with the Abbott Steel Ball Process, for what it had formerly cost them for buffing **100 pieces**—each cent of cost now producing **500 times** as much as it did before.

In another factory two men are now doing the work previously done by 150 workmen, and so on.



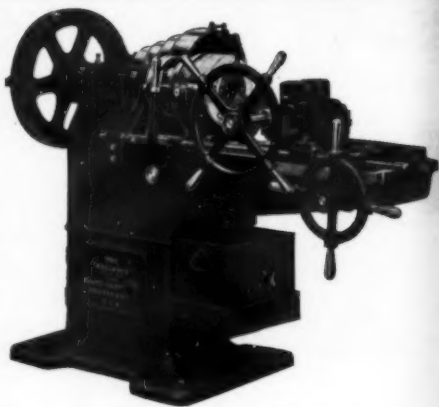
The Abbott Burnishing Barrel For Polishing Small Metal Articles

The Abbott Barrel being narrow and of large diameter, when in operation and filled half full of Steel Balls, causes these several hundred pounds of Balls to continually work into a high pile, which, sliding down, creates weight and friction on the work. Each Ball becomes an individual burnishing tool, and there are several hundred thousand of these tools all working at once. This is Steel Ball Burnishing.

We are the originators of commercial Burnishing by means of Steel Balls, and have been sending Abbott Barrels and Abbott Steel Burnishing Balls to responsible concerns on approval for over three years—and in most cases we receive a check before the expiration of the approval time.

Let us send you an Abbott outfit. "Get the Abbott Habit."

The Abbott Ball Co.
Elmwood District, Hartford, Conn.



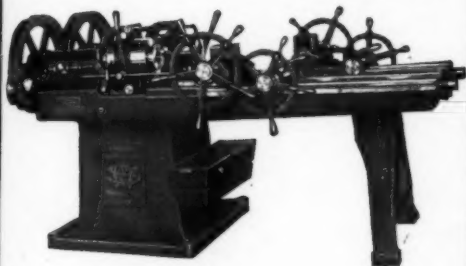
Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio

"Standard" Stay Bolt Cutter

A Double Machine of Exceptional Capacity



A machine whose productiveness and economy do not depend upon the operator. The opportunity for error is so reduced that mistakes are practically eliminated, and the output of perfect work is greatly increased. With our power feed lead screw attachment, a thread of perfect shape and pitch is produced automatically. There is no waste of time in changing lead screws, and it is impossible to get the wrong one by mistake. There is a micrometer adjustment for size which can be set while the machine is running, and the control of the machine in other ways is equally simple and certain. The 2½, 3 and 4-inch machines can be equipped with lead screw and *quick change* gear to cut all sizes within their range; smaller sizes to 1½-inch are cut with our standard bolt dies on the 1½-inch cutter.

You'll find it well worth investigating

Universal Machine Co.

Enterprise Street, Bowling Green, Ohio

Saves Time and Material

The Marvel is a Marvellous Economizer

Cutting up the entire bar into duplicate pieces, all automatically *without operator's attention*, with great accuracy, and a minimum waste of material, this improved high speed saw reduces time and expense. Has an even, draw-cut stroke, and perfect lubrication. Has the capacity of ten ordinary machine.

Send for descriptive circular of this machine and other Hack Saws, Punches and Shears.

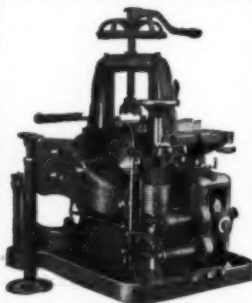
Armstrong-Blum Mfg. Co.

341 N. Francisco Avenue
Chicago, U. S. A.



Patent Applied For

Your Cold Metal Saw Work



The Lea-Simplex will turn it out quickly, accurately and economically. It has the smallest number of working parts possible, and all of these are outside of the frame—easy of access. The hand wheel and lever place the saw blade under instant control at all times.


Send for a copy of "A Short Story for Busy People."

Lea Equipment Company

600 Wyoming Street,

Philadelphia, Pa.

Suppose



**A
Hack
Saw Lasts
an Hour and
Costs Six Cents**

a hack saw lasts an hour and costs 6 cents, and the time of the man using it costs 30 cents—doesn't it pay to use a new sharp blade?

But every time a blade is changed, just so much of the man's time is lost—doesn't it pay to get the blade that lasts longest and the blade that cuts fastest while it *does* last?

The Starrett Hack Saw

cuts fastest because there is a particular kind made for every job, and each of the keen square teeth does its share of the cutting.

It lasts longest because the best steel goes into its composition, and our superior tempering process makes it uniform throughout. It won't shell off. **Try Just One Starrett.**

Send for Catalog No. 19 HT

The L. S. Starrett Co.
Athol, Mass.

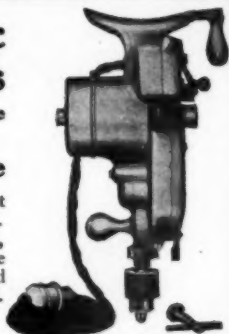
Temco Electric Portable Drills

give satisfaction because
they are built for

Reliable Service

The are light in weight
and convenient in shape.
They run on either current,
forward or backward. Write
us your requirements, and
we will ship you one on trial.

A catalog sent on request

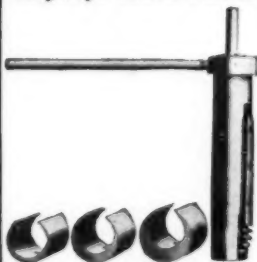


Model "B"

The Temco Electric Motor Co.

No. 55 Sugar St., Leipsic, Ohio, U. S. A.

Keyways Milled with the National Keyseater



possess all the properties that
are required of keyways. They
are central, of proper width
and depth, parallel with axis
of bore, and one is a duplicate
of the other.

The tools are made in the
standard sizes most commonly
used, from $\frac{1}{8}$ in. to $\frac{3}{4}$ in.

By the use of Bushings many
diameters of bores can be key-
wayed with one tool.

The keyseater can be made
to mill double keyways so that
the second keyway is milled
directly opposite the first.

Taper keyways in straight
holes and taper keyways in
taper holes can also be milled.

All of the above operations are performed on your drill press.

Let us send you our booklet

National Machine Tool Co.

128 Opera Place, Cincinnati, Ohio



Here is a Babbitt Melter!

In most shops, anything is good enough for babbitting. Old ladles, encrusted melting pots, and a miscellaneous collection of battered pots form the principal part of the equipment.

Discard all this.

Get a Vesuvius Babbitt Melter.

It is economical in gas consumption.

We can prove it

Price No. 1, Capacity 200 lbs., \$25.00

" No. 2, " 50 lbs., \$12.00

Net F.O.B. Rochester

The W. P. Davis Machine Co.

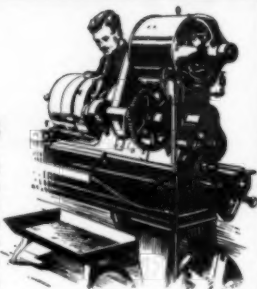
Builders of Lathes, Chucking Machines and Keyseaters

Rochester, N. Y.

MOTOR DRIVE FOR MACHINE TOOLS

Accurate Speed Adjustments

An accurate method of speed control makes possible the running of all machines at the exact speed necessary to produce the quickest results on each operation.



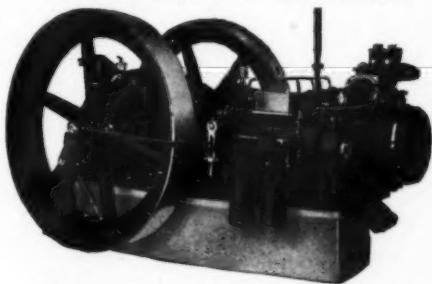
The only real accurate method of speed control over wide ranges is offered in the Reliance Adjustable Speed Motor of the armature shifting type. With this motor there is no running just above or below the speed that will produce the best results, as the running speeds within the range of the motor are unlimited. Every change in material or the character of the work can be met quickly and accurately by a corresponding change in speed. This permits the running of each machine to the limit of its capacity, insuring maximum output on all kinds of work.

Our Folder 10 L will show you in detail why Reliance Motors are ideal for machine tool service. Write for a copy today.

RELIANCE ELECTRIC & ENGINEERING CO.
1050 IVANHOE RD • CLEVELAND, O.

A Power Plant *FREE!*

We will Install it at Our Expense and
Take Our Pay out of the Savings



The Elyria Oil Engine 25 to 125 H. P.

If you are using an average steam engine, or electric motors with central station service, we will install an Oil Engine that will deliver—

11 to 12 brake horse power hours on one gallon
of your cheapest fuel oil;

9 to 10 brake horse power hours on one gallon of
the same oil at one-half rated load;

And that will run 24 hours a day for weeks without a stop---

And Take Our Pay out of the Savings!

WRITE US about your present power, its cost, and cost of the cheapest fuel oil in your market; and if in our judgment our engine will meet your requirements, we will renew this proposition in writing.

We don't argue. We prove. Will you write?

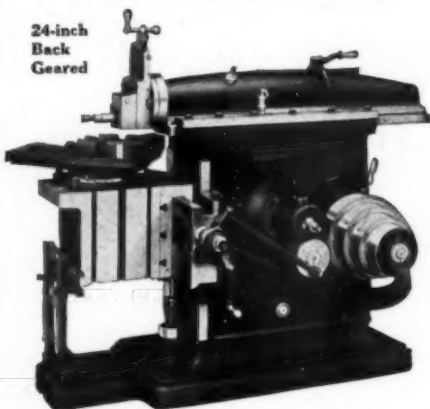
The Elyria Gas Power Co.
Elyria, Ohio

Also builders of "The Little BIG ENGINE" for Natural & Producer Gas

"Queen City" Exclusive Features

Give Service and Endurance

**24-inch
Back
Geared**



The Difference

Between "Queen City" exclusive construction (**hardened** and **ground** journals with **ring** oiled bearings) and other shaper journals is as great as the difference between high-speed and carbon tool steels.

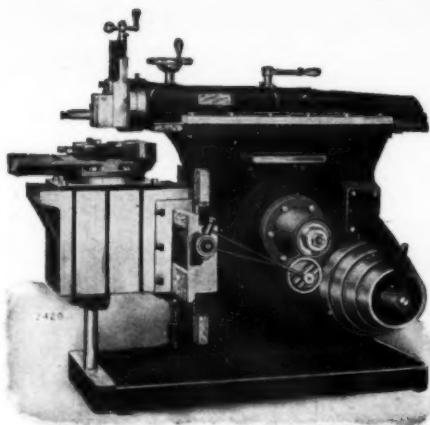
Hard, slick journals with flooded lubrication (minimum friction and wear) as against cast iron and soft steel and squirt-can methods.

You should know about our other superior features.

We guarantee as high speeds and as wide feeds as the work or cutting tool will stand, and permanent accuracy.

Good dealers everywhere; or write US

Queen City Machine Tool Co.
Cincinnati, Ohio



Shaper Excellence

**You get it in the "Cincinnati"
because it's built into the Tool**

WHEN a corps of mechanical experts devote all their time and attention to the perfecting of one class of machine tools, and use the best and most suitable materials for the purpose, the result should be as near perfection as is humanly possible.

In actual, severe service, the "Cincinnati" has substantiated all the claims we make for it—maximum power, accuracy and durability—top notch efficiency and economy. Will you let us prove up?

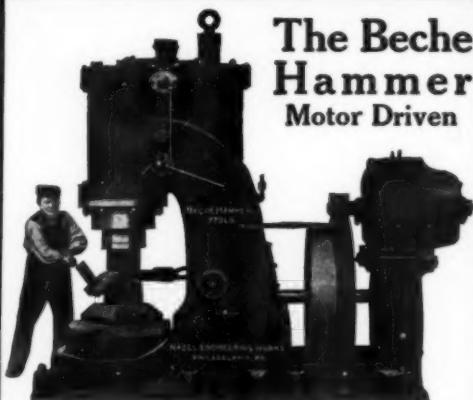
We have a Shaper Book that contains a whole lot of valuable pointers. A copy free to you for a postal.

The Cincinnati Shaper Co.

Colerain Ave. & Elam St., Cincinnati, Ohio

The Beche Hammer

Motor Driven



**The Heaviest, Most Powerful, Efficient
and Economical Hammer of Its
Size on the Market.**

*Hammer and Compressor Combined, No Piston
Rods, Springs, Straps or Cushions.*

Simple—Durable—Reliable

Powerful, non-bounding, squeezing blow. Positive, flexible control. Long stroke. Variable blows at will. No adjustments. Dies at any angle. Belt drive, no countershaft. Motor drive, geared direct.

Sizes and Normal Capacities of Beche Hammers

66 lb.	165 lb.	250 lb.	350 lb.	500 lb.	770 lb.
2" dia.	4" dia.	5" dia.	7" dia.	8" dia.	9" dia.

Write for Catalogue and Prices

Nazel Engineering & Machine Works

Sole Builders for United States and Canada

5th and Luzerne Sts. • • Philadelphia, Pa.

Radial Drilling That Spells Economy



The T. & F. 3-foot High Speed Radial for Holes $\frac{3}{4}$ -inch and Smaller in Work Too Large for Vertical Machines

The ordinary radial drilling machine is not designed for high speed work, and hence is wasteful when used for drilling that should be done on a high speed, sensitive machine.

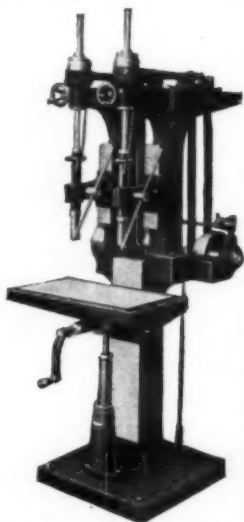
The T. & F. Radial takes its place, and by combining the range and flexibility peculiar to this type of machine, with the speed and economy of the sensitive, solves the problem of drilling small holes in large work in a way that is saving manufacturers a barrel of money.

*We Have Some Interesting Comparisons Of Costs We'd Be Glad
To Send You. May We? "Yes" on a Postal will Bring Them*

The Taylor & Fenn Company
Hartford, Conn.

If You Want
**Greater Production
At Reduced Cost**

The
Avey
Ball
Bearing
Drilling
Machine



Is what you need

With Greater Driving Power, Higher Speed, More Range and Less Loss of Time in Adjusting, you will find that your labor expense will be cut in two.

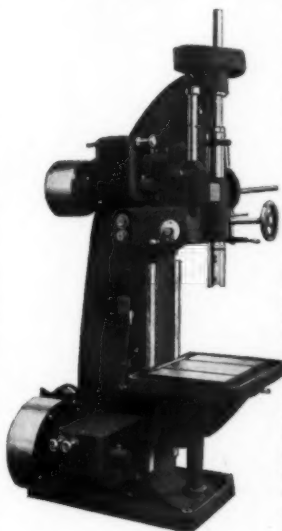
*An hour of comparison will save you many hours
of labor in the shop.*

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio

Real High-Speed Drillers

Test Runs

**Indicate Power, Capacity and Endurance
Far Beyond Ordinary Standards**



For Highest Efficiency

a drill must in large measure have the action of a punch, and it is the practical working out of this principle that gives the Baker machine its unexampled effectiveness. It so balances power against thrust and resistance as to obtain the greatest cutting effect at the drill point—the only possible way of producing maximum results at minimum cost. It has 8 speed and 12 feed changes, all geared; direct single belt drive; ball bearing thrust for spindle; ground shafts; bronze-bushed bearings; hardened gears running in oil—in a word, every improvement that will add to its power and efficiency. It is unequalled as a money saver.

*We have a Catalogue For The Man Who Wants
Results. Write for it.*

Baker Brothers, Toledo, O.

Here You Are

A Strictly High-Grade 20-in. Vertical Drilling Machine with Back Gears, Power Feed and Automatic Stop, Weight 800 lbs. Capacity, 1½-in. in Cast Iron, 1¼-in. in Steel.

Spindle is made of steel, ground, has drift slot through nose, ball bearing thrust, pair of jamb nuts for adjustment, and is provided with quick return operated by steel handle at left of machine.

The head is stationary, is cast separate, is tongue and grooved to column and securely bolted, and may be adjusted to take up the wear of the spindle.

Back gearing is very powerful, easy of adjustment, and the power feed is very efficient.

The workmanship and materials throughout are of the highest grade.

All shafts, studs, bolts, etc., also the rack and pinions, are made of steel. All gears are cut from the solid and are covered with guards to prevent accidents.

We guarantee the above machine to be the best value in Vertical Drilling Machinery ever offered to the trade. We will ship to any responsible concern in U. S. on 30 days' approval, with understanding that machine can be returned at our expense if our claims are not substantiated by trial and inspection.



\$85.00 F. O. B. Kokomo, Indiana

Send for Catalog

Superior Machine Tool Co.

Kokomo, Indiana, U. S. A.

Cable Address—Kokodrill—U. S. A.

Codes—Lieber's—A. B. C.—Western Union

Aurora Extra Heavy 32-Inch Upright Drill

**With Back Gear, Positive Gear Feed, Sliding
Head, Automatic Stop and Ball-Bearing Spindle
Belt or Motor Drive**

It has the design and construction for speed and heavy service.

The weight is 2,800 lbs. on skids.

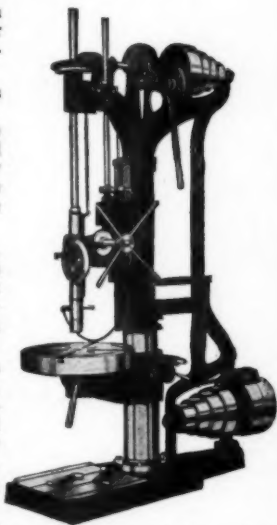
The tight and loose pulleys are larger and wider than on any other machine on the market—5½-in. face by 14-in. diameter.

The feed box, with six changes, has a solid bottom that can be filled with lubricator and forgotten for a month or more.

Every provision is made for strength, speed and convenience, and it is sold at a remarkably low price for the quality.

We make Upright Drills 14 to 44-inch.

The 24 to 44-in. inclusive are similar to the 32-in., as shown in illustration.



Write for description and interesting prices

The Aurora Tool Works
Aurora, Indiana



Electric Air Cooled Drills

Are Best by Test

Are You Still Paying Two
or three prices for a job
just because you have al-
ways done so



The fact that the U. S.
Government tests prove they
are superior in every respect
should be convincing evidence
to all users of this type of tool.

Aside From This

there's the evidence of thousands of users all over the United
States. Would they use them if they were not the best? Hardly.

Want a Catalogue? A Postal will bring it.

We use aluminum for Casing on all Drills to cut down weight
Power from any Lamp Socket

SENT ON TRIAL ANYWHERE

*Made for alternating or direct current
Just attach it to your nearest lamp socket*

The United States Electrical Tool Co.
Cincinnati, Ohio

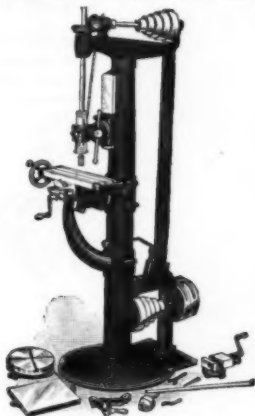
NEW YORK
50 Church St.

BOSTON
12 Pearl St.

CHICAGO
8 E. Michigan St.

A Saving

Of 20 to 50% of time on all kinds of hard machining and tool room work is yours with the No. 1 Knight



THERE'S ALWAYS a reason for things—quick results must have quick causes. When you buy the Knight Milling and Drilling Machine you get a speedy tool that naturally lowers shop costs on a big variety of expensive work. It reduces the time on many difficult operations—our circular shows 16 of them—and necessity and common sense will suggest many another.

Let us send you one of our illustrated circulars, and we'll be surprized if it doesn't suggest a worth while saving to you.

A Postal sets the machinery in motion

W. B. Knight Machinery Co.
St. Louis, Mo.

No. 1 1-2 and No. 2 are Heavier Machines of the same type

20" Power Drills

Made in
Eight Styles

Round or Square Base

LEVER FEED

LEVER and WHEEL FEED

**POWER FEED and Automatic
Stop**

**POWER FEED with Back Gears
and Automatic Stop**

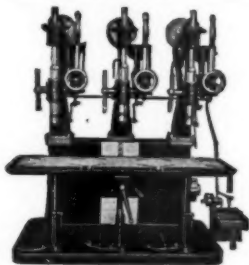
Send for catalog



Fig.
862

The Silver Mfg. Co., 385 Broadway
SALEM, OHIO

Rockford Gangs



They not only drill, but they bore, ream, tap and face
without removing work from jig.

Write for descriptive matter

Rockford Drilling Machine Company
Rockford, Ill., U. S. A.

Now \$55.00 F. O. B. Kokomo, Ind.
Earn Ten Dollars

We have on hand for immediate delivery a number of 20" Square Base, wheel and lever feed upright drill presses as illustrated, that have always sold at price of \$65., f.o.b. Kokomo, Ind.

These machines will be sold at a uniform price of \$55.00 f. o. b. Kokomo, Ind., until further notice.

These machines are high grade, carefully built and equal to other machines of the same size, and are guaranteed by us the same as if sold at our regular price

We will ship to concerns satisfactorily rated on regular terms of 30 days net; and to those that send cash with order we allow an extra 2%. We agree to refund your money if not entirely satisfied.

If you can use one of these machines you better order at once, as our supply is limited.

*Handsome Catalogue illustrating our complete line,
20 to 30 inch inclusive, upon request.*

Superior Machine Tool Co.
Kokomo, Indiana, U. S. A.

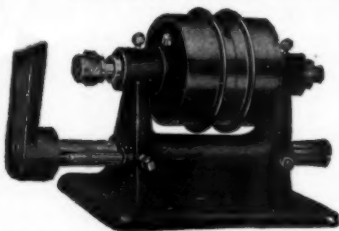
Cable Address—Kokodrill—U. S. A.

Codes—Lieber's—A. B. C.—Western Union



Burke's Tapping Machines

Are Rapid, Accurate and Convenient



Made in
several
sizes
for
tapping
up to
 $\frac{1}{2}$ -inch

These tappers are built throughout with a good deal more than usual care, and you will be glad to know about them. If you will mail us your address, we shall be pleased to send full description and quote close prices.

The Burke Machine Tool Co.
Conneaut, Ohio

Bench Drill

A splendid little tool for light drilling up to $\frac{1}{8}$ -inch.

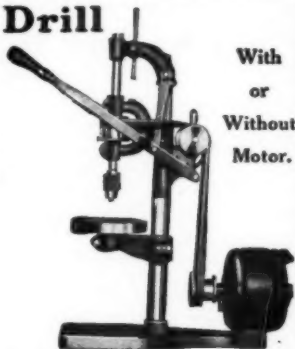
Is used very much for wood boring with a foot lever to throw the spindle.

Without Motor:

Weight, 55 lbs.
Net Price, \$23.00

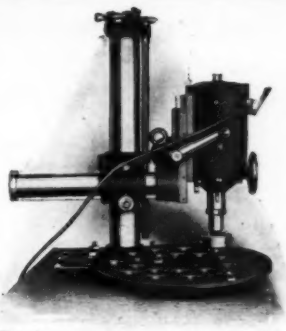
With D. C. Motor:

Weight, 76 lbs.
Net Price, \$44.00



With
or
Without
Motor.

Reed Drill Company
Worcester, Mass.

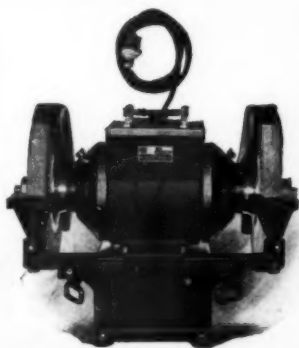


View
Shows
**Radial
Drill**
Cutting
3½-inch
Holes
in
Boiler
Plate

“HISEY”

Grinders

For
Cutters
Reamers
Rolls
Surface
and
Parallel
Grinding



Hisey-Wolf Machine Co.
Cincinnati, U. S. A.

New Model, Class B, Henry & Wright

Ball Bearing High Speed Drilling Machine

Quality and efficiency are the governing features of the production of the Henry & Wright drilling machines, and continuous advance and improvement is the necessary result.

The new Model, Class B, here shown, contains a multitude of original features, all adding to the convenience, efficiency and capacity of the machine. These include the complete control of belt changes from the front, a new belt shifting device, shifting the belt from any degree of a circle desired, a new spindle driving mechanism and new spindle arm clamp. The machine is of fresh design throughout, and even in its minor improvements, such as a wider oil groove around table and base, a table guard, etc., shows how carefully every point and feature has been thought out and developed.

This new model simply raises by another notch the high standard of efficiency and economy in high speed drilling which the Henry & Wright machines have so long maintained. They do their work with less friction, less power, fewer repairs and at a lower cost per unit of production, giving, therefore, more service for the money spent either for the machine itself or for its maintenance and operation.

A useful table of feeds and speeds for drilling, worked out in actual practice at a cost of several thousand dollars, is at your service **free**. Write us for one; it will help you raise the efficiency of your drilling plant.

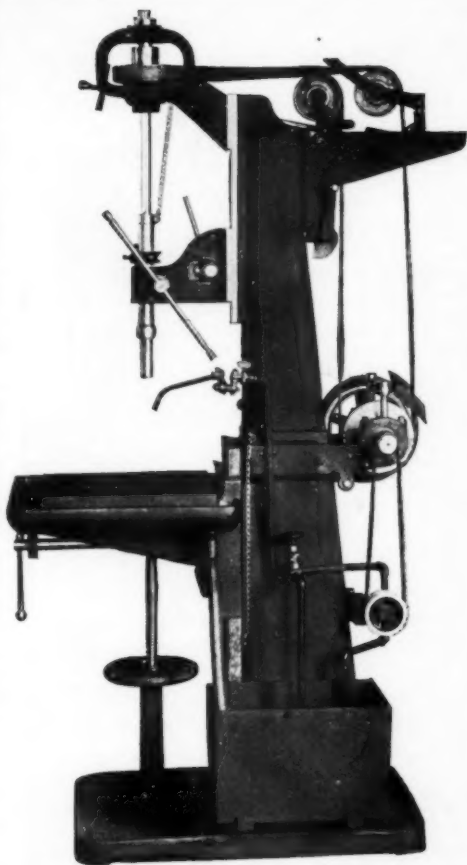
The Henry & Wright Mfg. Co.
Hartford, Conn.

Wright

Speed ne

features the
machines and
necessary result.
n, contains a
convenience,
e include the
nt, a new belt
ee of a circle
new saddle
roughout and
er oil groove
how carefully
and developed.
otch the high
speed drilling
o long main-
less power,
production,
spent either
and operation.
ling, worked
sand dollars,
will help you

fig. Co.



AA-A1- 28" Superior Driller and Tapper

Positive Geared Feed,
with four changes, in
thousandths.

Bronze Bushed Sleeve.
Ball-bearing Thrust.

Pair Jamb Nuts for ad-
justment.

Drift Slot thru Spindle
Nose.

Table Arm, large bearing.

Automatic Stop does not
disengage worm from gear.

Automatic Stop is adjust-
able for different size Drills.

Head raised by Rack
and Pinion.

Table raised by Rack
and Pinion.

Back Gear Ratio, 2 to 1

Comb. Gear Ratio, 10 to 1

Diam. of Column, 8½-in.

Face of Column, 7-in.

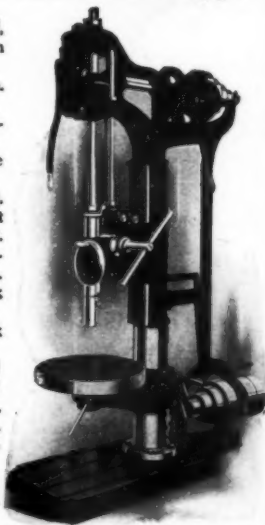
Cone Pulley, 6-8-10-

12x4-in.

T. & L. Pulley, 12x4-in.

Feed in thousandths, 6-
10-12-20.

Speed T. & L. Pulley, 325



Weight—3250 lbs.

READ THIS: We claim the friction geared tapping device
as furnished by us, to be the only satisfactory
tapper ever fitted to vertical drilling machines. Its superiority over
all other forms is due to our long driving key. On the above machine
the key is 16 in. long. No binding or cramping, no jar and no trouble.
Full power of belt to tap. We guarantee that we can drive a larger
tap with this machine than is possible with other machines of same
size and pattern. Try us.

*Handsome catalogue illustrating our complete line,
20 to 36 inch inclusive, upon request.*

Superior Machine Tool Co.
Kokomo, Indiana, U. S. A.

Cable Address—Kokodrill—U. S. A.

Codes—Lieber's—A. B. C.—Western Union

Remember When Ordering Cutters

That our experience of over fifty years in making and using cutters has made it possible for us to successfully cope with the difficulties encountered in their manufacture. To-day our line comprises thirty-six styles, and over four thousand sizes, all of a uniform standard and quality.

Send for our complete cutter catalogue.

Brown & Sharpe Mfg. Co
Providence, R. I., U. S. A.

B&S

"Whitney" Keys and Cutters For **"The Woodruff System of Keying"**

Full Size Key Number 1.



"Whitney" Keys are made in 114 different sizes and in three grades as follows:

Regular Carbon Steel Keys
Regular Carbon Steel Keys Case Hardened
Nickel Steel Keys Heat Treated

"Whitney" Cutters are furnished in both Carbon Steel and High Speed Steel, so no matter what your requirements, you will find in our line exactly the Key and Cutter to meet your particular conditions.

Catalog No. 10 Gives Full Particulars

The Whitney Manufacturing Co.,
Hartford, Conn.

Manufacturers of Hand Millers, High Grade Driving Chains, Water Tool Grinders, "The Woodruff System of Keying," Presto Chucks and Friction Tapping Devices.

"Practical Hints On Internal Grinding"

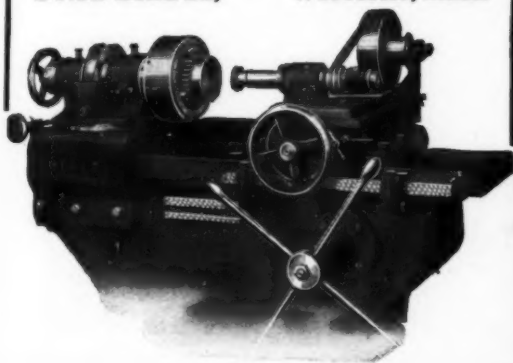
Are excellent with any type of machine, but give the best results when used with the best machine.

We have referred several times to our style No. 75 **Internal Grinding Machine** designed purposely for grinding short holes in gears, bushings, cones, etc.

Some customers are grinding holes with this machine cheaper than they can hand ream them.

Doesn't it look as though it was built for business?

The Heald Machine Co.
6 New Bond St., Worcester, Mass.



One Besly Grinder

with unskilled operator

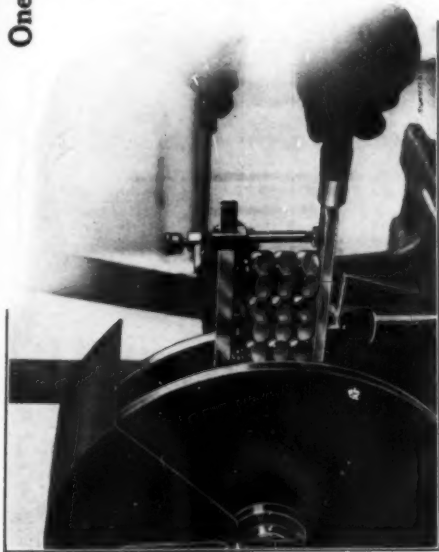
Displaced Ten Milling Machines
and reduced cost ninety per-
cent on finishing sides of
brass hexagon nuts. 1,000
to 6,000 surfaces per hour.

INVESTIGATE

Send drawings, sketches or
samples of your work and learn
how much a **Besly Grinder**
will save in your shop.

Ask for illustrated booklet, "Besly's Modern
Disc Grinding Practice." *It's Free.*

Besly=Chicago
120 N. Clinton Street
Largest Manufacturers of Disc Grinders in
the World.





Blount Motor Driven Wet Tool Grinder

This machine is of modern, heavy construction, with self-oiling bearings throughout. It is equipped with our vertical centrifugal pump which furnishes a constant supply of water.

The pump is of snail shell design, and the propeller is so fitted that it does not touch the case at any part. A sleeve cap fits the pump case and extends to a point above the water line which prevents leakage without the use of packing.

The tank in the column carries a large supply of water, and a pan set below the wheel prevents dirt from settling in same. Machine takes wheels 20x2½ inches.

J. G. Blount Company
Everett, Mass.



Constant Efficiency
Ransom Motor Driven Grinders
With Automatic Control of Variable Speed

The controller automatically maintains the same periphery speed on wheels of different diameters.

It insures a constant maximum grinding efficiency as the emery wheel wears down.

By making it impossible to speed the wheel too fast, it's a safety device, too.

These are thoroughly well built machines of massive construction, with the weight and floor area to prevent vibration.

Ask for Bulletin No. 9, showing all sizes

Ransom Manufacturing Co.
Oshkosh, Wis.

This is the Age of Efficiency

The Efficiency Engineer is now in the spot-light. In all lines of business, he is at work cutting out waste and instituting economies.

Have you scientifically analyzed your grinding methods?

The record of the Bath Universal Grinding Machine is a record of efficiency; it decreases the cost of finishing and increases accuracy.

We are in a position to render scientific service in the study of your grinding problem.

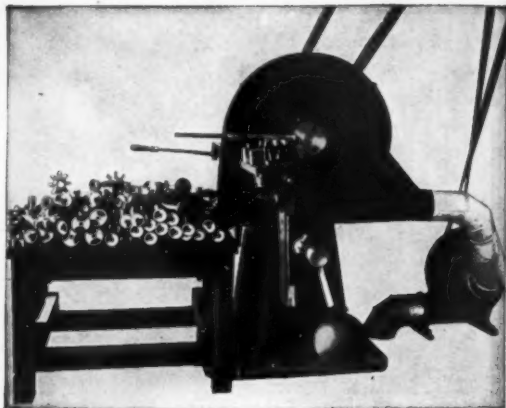
The Bath is the way of efficiency. Investigate it.



Bath Grinder Co.

75 Walnut St.,

Fitchburg, Mass.



Doing It The Right Way

At the rate of 210 per hour

The right way is always the best way. The right way to finish the pieces shown in above illustration is on a Gardner Grinder. This is because they can be finished on our machine in about one-fifth the time and about fifty per cent. better than by the old time method formerly used. Consequently the best way is to Gardner Grind them.

You know what a gas burner is as used in the ordinary gas range for cooking. It is merely required to face off the circular ends straight and clean for an air adjusting cap. A very simple fixture, mounted on our Lever Feed Table, holds the piece while being ground. With unskilled labor these pieces are Gardner Ground at the rate of 210 per hour.

We do not claim Gardner Grinders will do **everything**, but we **do** claim there are innumerable pieces now being finished on shapers, milling machines, lathes, planers and precision grinders that can be Gardner Ground with equal or superior accuracy, 3 to 30 times faster than they can be finished on the machines above mentioned.

Make us prove this statement by grinding some of your sample pieces—free of charge.

Free booklet—"Disc Grinder Tests"

Gardner Machine Company
Beloit (The Disc Grinding Authorities) Wis.

Over 7,000 Wide Awake Manufacturers Use New Yankee Drill Grinders

Do YOU? If Not, Why?

They have gained accuracy and speed in drilling work, cut 75 per cent from the cost of drills, and reduced time of grinding. Would you like to know how?

YOU Can Do This Too!

Perhaps—we say again
Perhaps—The “Old
Man” in your shop can
grind a drill “good
enough” by hand.

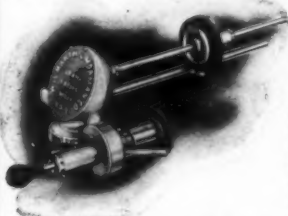
But if he can, he
is too good a me-
chanic to be cheat-
ing the apprentice
boy out of his
rightful job.

New Yankee
patents provide
the only means
for grinding both
faster and better
than by hand:

Get Complete Catalog



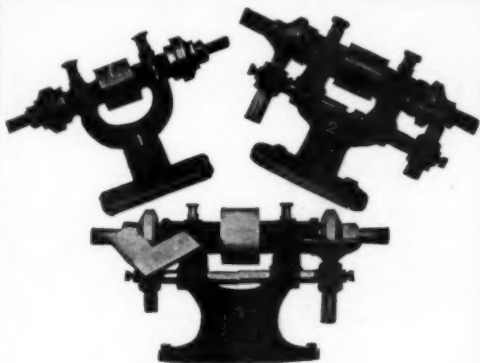
Style WPL No. 60—2½ in. Drills.



Grinding Lathe Centers

should be an every-day job
in almost every shop. Can
every lathe operator, down
to the apprentice do an ab-
solutely perfect job in 5 min-
utes' time with your present
means? He can with the
Wilmarth & Morman Center
Grinder. “A Brief Treatise
on Lathe Center Grinding”
sent free on request.

Wilmarth & Morman Co.
575 Canal St., Grand Rapids, Mich.



Emery Grinders

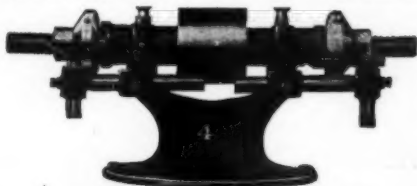
Better Ones for Your Money

They look like others, but are different in details of design and construction. Built like machine tools, with the arbors and collars accurately turned and balanced, and properly lubricated and protected against dust. They run easier, last longer and give better service. Made in quantities sufficient to keep down manufacturing costs, and the price. I can interest you in Bench, Column, and Cabinet Grinders, Foot Presses and Bench Tapping Machines. *Write me.*

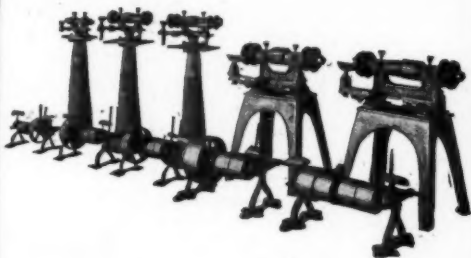
E. O. PARTRIDGE

2047-9 Lake Street,

- - CHICAGO



"Canton" Emery Grinders



Thoroughly Good Grinders At a Moderate Price

Good material in them—no better can be had; and the work on them is all by skilled mechanics. They are shapely, substantial, rigid and easy to work. Caps and frames are separately babbitted, to allow rebabbitting as occasion requires. Collars and pulleys are shrunk on the shaft and turned up together, making them perfectly true and solid. Both rests and holders are adjustable. You'll find these grinders safe, serviceable and satisfactory.

***And at Mighty Interesting Prices
Write for them***

**Canton Foundry & Machine Co.
Canton, Ohio**



Are You Tired of Paying Big Bills for High Speed Steel?

ARMSTRONG TOOL HOLDERS

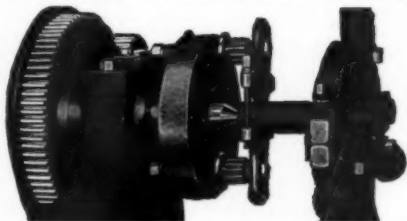
Make 1 lb. of Tool Steel go as far as 10 lbs. in Forged Lathe and Planer Tools.

Write for catalog—it tells other advantages

Armstrong Bros. Tool Co., 308 N. Francisco Ave.
CHICAGO.



The Hill Holdback Dog



Just the thing for holding work up to the head center, with one end running in the steady rest. Positive in action and quicker than the old way. The springs give it the right flexibility. Two sizes. Write—

The Ready Tool Company
Bridgeport, Conn.

Owners and Manufacturers, M. B. Hill Mfg. Co. Machine Dogs.



The Greatest Strength Where There is the Most Strain

**A feature peculiar to the Eberhardt
The best turning tool made**

The extra metal in the head of the tool, which is made larger than the shank, safeguards it at the critical point, insuring its dependability under the hardest service. They are made to wear—not to break.

The material is steel, forged and hardened; it goes the limit in toughness and strength. The holder is accurately squared, both as to the sides and the hole for the cutter, which has a broad flat tool seat. A tool steel set screw, with hardened points, holds the cutter in place with the rigidity of a single piece. The superiority of this holder is proven both by tests and service.

We make Straight, Right and Left Hand, Off-set and Threading Tool Holders, and other good things for the machine shop. Send for our catalogue and read about them. You'll be interested.

A Postal from you is all we need.

**Union Caliper Company
Orange, Mass.**



The Morse "Rarefied" Dust Collector

Draws in the Dust-Laden Air like a Vacuum Cleaner and Discharges the Dust before the Air Reaches the Fan

With the Collector located **between** the source of dust supply and the fan, the "Morse" works on the modern partial-vacuum (rarefied) or suction principle. Instead of blowing or forcing or pushing the air into the Collector, it **draws** it in. By this method the dust is collected and automatically discharged before the cleansed air reaches the fan, and the construction of the Collector itself is such that friction or dust-grinding-against-the-walls is reduced to a minimum. There is no cleaning by hand, and it requires the least attention in every way. Those who operate

Emery Wheels, Polishers,

Tumbling Mills, Sand Blasts, etc., will find the Morse "Rarefied" a boon, in the perfection of its work and in the small amount of care required.

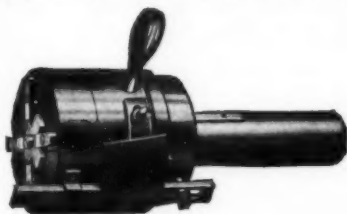
Write for Booklet.

The Knickerbocker Co.,
Jackson, Mich.



No More Power Is Necessary

For Cutting a Taper Thread than for a straight thread of equal diameter, where the **Geometric Taper Threading Die Head** is used.



The Chasers follow the taper of the work automatically, which greatly increases the output and gives a superior finish to the threads. At the end of the cut the Chasers release the work automatically, and no reverse motion of the machine is necessary, the Die Head being withdrawn without the Chasers touching the work.

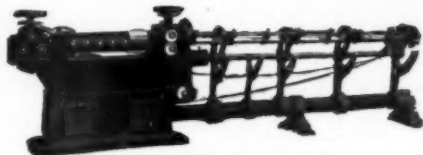
One of these Die Heads, fitted to your Screw Machine or Turret Lathe, will give you accurate taper threads at slight cost.

Quotations promptly made. Inquiries promptly answered.

Write Us

The Geometric Tool Company
New Haven, Conn.

Wear Well—Work Fast



Automatic Wire Straightener and Cutter

A well proportioned, substantial bed, with a rigid extension, and all parts of long lived material insure lasting machines. Long arbor bearings, with end thrust bearings driven at high speed, mean large production. They are easily adjusted for various diameters of wire, and any length shorter than the maximum for which the machine is built.

THE F. B. SHUSTER CO., New Haven, Conn.

Formerly John Adt & Son

Established 1866

Geared Straighteners and Cutters for squares, hexagons, flats and strip stocks, Buckle Tongue Machines, Sprue Cutters, Etc.



Riveting

that cost \$12 per day by hand
now costs \$1 per day by using

A Grant Noiseless Riveting Machine

Absolutely perfect heads formed on rivets
in less than one second per rivet head.

Noiseless in every sense of the word;
each and every rivet head has a highly
polished finish.

We build machines for rivets from the
smallest made up to $\frac{7}{8}$ in. in diameter.

Send us a sample of your work and let
us show you how we can improve the ap-
pearance of your product, and reduce your
cost of production.

The Grant Mfg. & Machine Co.

C. E. Station, Bridgeport, Conn.

Are you using the most improved Type of Automatic Threading Die? If not, get in line and use

New Model Type A

Ideal Opening Die

Simple construction---Few Parts---and impossible to get tapered thread

Let us know your wants. Write for information regarding Die.



This Die does not depend on any Springs for opening. As soon as Clutch is disengaged the cutting strain opens Die.

Notice design of Chaser, which allows for shoulder work.

Notice how Chaser is backed up. Thrust directly in back of cutting strain; also key which makes it impossible to bell up which is the cause of tapered threads.

This is the most improved type of Opening Die on the market at the present time

Manufactured By

The Ideal Opening Die Company

Office and Factory, BEAVER FALLS, PA.

High Efficiency



from men,
machines and
organization
is gained by
applying

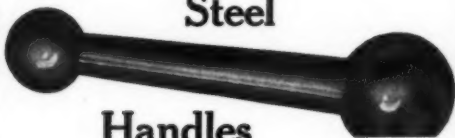
Durant Counters

to counting and measuring product. Five models—
forty styles—with which to meet your requirements.
Punch presses, screw machines and conveyors need
them particularly.

Sent on 30 days' trial. Ask for catalog No. 19

The W. N. Durant Company
Milwaukee, Wis.

Steel



Handles

For power tools and similar purposes

Accurate, highly finished, complete on receipt, and ready to
attach. Manufactured as a specialty, we offer you the result of
quantity production, in the way of efficiency and price. Catalog
of standard handles with prices and discount on application.

The Cincinnati Ball Crank Co.
1245 Plum Street, Cincinnati, Ohio



It Has Made Good



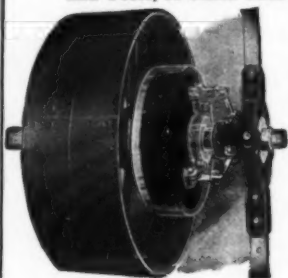
Since we placed the No. 2 JACOBS IMPROVED DRILL CHUCK on the market eight years ago we have, to meet the demand, added nine other sizes and forms, and have sold more than 130,000 Drill Chucks. This remarkable record would not have been possible had not the JACOBS IMPROVED DRILL CHUCK "MADE GOOD."

Our 34 page illustrated catalogue is sent upon request

The Jacobs Manufacturing Company
32 Union Place, Hartford, Conn., U. S. A.

The Edgemont Plate Clutch

Designed, after Exhaustive Experiments
and Tests, to stand both Use and Abuse



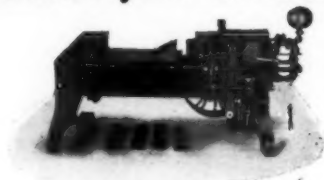
It is simple and easily adjusted. The wearing parts are enclosed, permitting them to be used continuously in dusty places. No oil is required on friction plates, which are faced with a burn-proof brake lining, providing a contact surface readily replaced without removal from shaft.

We make clutches for all transmission purposes, including the Edgemont Expanding Clutch, which has been adopted by 40 leading machine tool builders.

Tell us your wants. Write for Catalog D.

The Edgemont Machine Co., 997 Washington St.
DAYTON, O.

Scientific Hydraulic Bulldozer



This machine can be used for bending or straightening pipe, rods, bars, etc.; for all kinds of stoving or shaping, for light or heavy welding, and many other purposes. Long strokes or short strokes can be made with it; also quick or slow movements.

Made by

Lourie Manufacturing Co.

Springfield, Illinois

Manufacturers of Hydraulic Machinery

The Sweetland

**Lathe Chucks for All Purposes—Independent,
Universal, Combination, Geared Scroll and Special**



Geared Scroll Chuck No. 6 with Solid Reversible Jaw

Two sets of jaws are unnecessary with this chuck, which is cheaper in first cost and saves time. There is no extra set of jaws to get mislaid and lost. The jaws are ground perfectly true on face and bite, after being case hardened.

This style of chuck, which has been thoroughly tested by years of practical use, is growing rapidly in popular favor.

Our entire line of Lathe Chucks is being improved constantly to meet the increasing demands of modern practice, and you can never go wrong when you order a "Sweetland" or when you specify it for your new lathe.

Our latest Catalog for the asking

The Hoggson & Pettis Mfg. Co.

New Haven, Conn.

Don't Miss A Good Thing

Free Oil



No. 400—Capacity: 2 Bushels

That is what the Curtis Oil Extractor means to you. It takes as good oil out of your chips and waste as you would draw from the barrel, and after the extractor has paid for itself, which only requires a few months, this perfectly good oil comes back to you practically for nothing. It is like laying down a dollar and picking up a string of them, as far ahead as you can see.

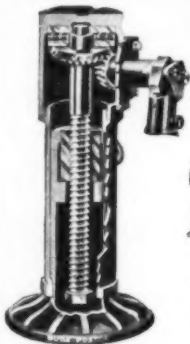
*If you knew what a good thing this is
you wouldn't wait to write; you'd wire*

Curtis Oil Extractor Company

25 Union St., Worcester, Mass.

Buda "Postop"

Ball Bearing Jacks



The jack with the positive stop—"Postop"—preventing screw from being raised above the proper limit. This patented feature saves more than the jack costs in lost time and repairs. Ball bearings are of special type, with balls held in phosphor bronze cage, more than doubling the wearing surface on thrust plates. The best jack for hard service, and therefore for any service. Write for description, and try one. You'll be glad to know that such a simple, powerful, serviceable jack is to be had. Costs no more than the ordinary kind.

Don't wait. Write now.

The Buda Company, Chicago



JUNK

**Men do not get the caps
Of Tucker's Positive Lock
Compression Grease Cups
They Won't Jar Off**

For Automobiles and all kinds of machinery having excessive vibration. Cup member has internally milled threads to gauge limits, ensuring interchangeability. We are prepared to furnish the cup part in pressed sheet brass in the following sizes:

$\frac{3}{4}$ in., 1 in., and 1 $\frac{1}{2}$ in., all 24 pitch thread.

Complete	{	No. 000	$\frac{3}{4}$ in. pipe shank
Cups		No. 00	1 in. pipe shank
		No. 0	1 $\frac{1}{2}$ in. pipe shank

PATENTED JANUARY 11, 1910

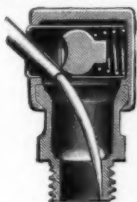
Tucker's Oil Hole Covers



No. 5 Style B



Self Closing



Style C, Self Closing

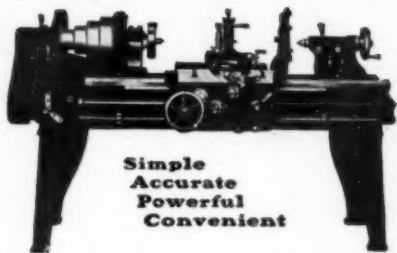
Note the indent of ball valve on styles B & C Style A



Send for Catalogue of full line of Covers
for all kinds of machinery having oil holes

W. C. & F. C. Tucker, Hartford, Conn.

Standard Engine Lathes



Furnished with either standard cone or with 3-step cone double-back-geared, **carrying a wide belt**, with 18 spindle speeds and wide feed range.

GREAVES, KLUSMAN & CO.
Cincinnati, Ohio, U. S. A.

In revising our manufacturing equipment, we find the following first class Used Machine Tools, which we offer at attractive prices:

ENGINE LATHES

ENGINE LATHES
 16x 6 Hendey, q. c. g.
 16x 6 Lodge & Shipley, q. c. g.
 40x 6 Pratt & Whitney, q. c. g.
 16x 8 Reed
 18x 8 Lodge & Shipley, q. c. g.
 18x 10 Lodge & Shipley, q. c. g.
 20x 8 Lodge & Shipley, q. c. g.
 20x 10 Lodge & Shipley, q. c. g.
 24x 8 Lodge & Shipley, q. c. g.
 24x 10 Lodge & Shipley, q. c. g.
 36x 12 Lodge & Shipley, q. c. g.

SPECIAL LATHES

24x7 Lodge & S. chucking lathe.
No. 3 Lodge & Shipley rapid
reduction lathe.

METAL SAWS

No. 3 Nutter-Barnes cold saw
Franklin cold saw, 3½ in. cap.
Globe power hack saw, 8 in. cap.

MISCELLANEOUS

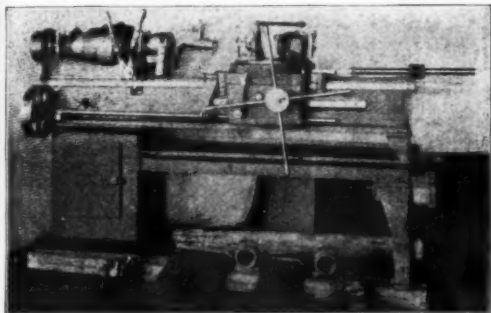
Mumford 12x40 molding mach.

Write for complete description with prices of machines in which you are interested

The Lodge & Shipley Machine Tool Co.
CINCINNATI, OHIO, U. S. A.

Second Hand Machinery

A Sample of our Second Hand Stock



2x24-in. Jones & Lamson Flat Turret Lathe, Cone Drive, Friction Head.

Boring mills, 42 and 76 in. Bullard, 2 swivel heads.
Boring, drilling and milling machine, horizontal, No. 1 Cleveland.
Cold saw, No. 11½ Higley.
Drill, sensitive, Allen, 3 spindle, ball bearing.
Drill, multiple, 17 D. B. Moline, 4 heads.
Drills, upright, full line of, 12 to 34 in. swing, all makes, fine condition.
Gear cutter, 36x9 in. Gould & Eberhardt.
Gear cutter, 84 in. Gould & Eberhardt, will cut spur gears 100 in. diam.
Gear shaper, 36 in. Fellows.
Grinder, crank, 16x66 in. Landis.
Grinder, disc, 23 in. Ransom style L.
Grinder, double end dry, 24 in. Springfield.
Grinding planer, vertical, Springfield Brandes.
Hammer, steam drop, 1500 lb. Billings & Spencer.
Hammer, steam drop, 1500 lb. Massillon, all steel frame.
Keyseater, No. 6 Baker.
Keyseat milling machine, No. 5 Burr, with routing attachment.
Lathe, tool room, 14 in.x5 ft. Lodge & Shipley, patent head.
Lathe, 16 in.x8 ft. Flather, compound rest.
Lathe, 18 in.x8 ft. Barker, compound rest, chuck, raised to 24 in.
Lathe, 18 in.x15 ft. Whitcomb-Blaisdell, with chuck.
Lathe, 24 in.x10 ft. Reed, compound rest, 20 in. chuck.
Lathe, 26 in.x14 ft. American, with chuck.
Lathe, 36 in.x12 ft. Perkins, compound rest, raised to 44 in.
Miller, plain, No. 3 Owen.
Miller, plain, No. 2 Cincinnati, cone drive.
Miller, universal, No. 2 Cincinnati, cone drive.
Miller, universal, No. 3 Cincinnati, cone drive, all power feeds.
Planer, 36x36 in.x10 ft. Whitcomb, 2 heads.

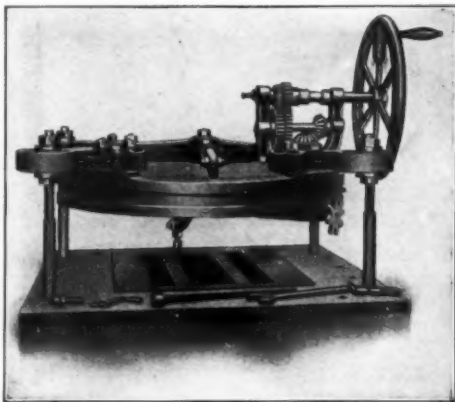
*We have many others. Write us for what you need
and we will send prices and complete descriptions.*

Marshall & Huschart Machinery Company

17 S. Jefferson St., Chicago. 334 N. Capitol Ave., Indianapolis.
925 Chemical Bldg., St. Louis.

Portable Rotary Planer

THE MACHINE WORK of this improved, time saving tool is perfect, requiring no filing or scraping afterwards, and there is no breaking of port edges.



Built in Six Sizes

ORIGINALLY DESIGNED to face off locomotive valves, but soon was found useful on a large variety of other work. This accurate tool planes any surface up to 42 in. diagonal measurement, and is readily attached to almost any shaped piece. It cuts repair costs in every way, the price of the machine often being returned in the time saved on a single job.

In the interest of shop economy and improved efficiency, get our catalog and full data of this and other Portable Tools—they pay big

H. B. Underwood & Company
1022 Buttonwood St., Philadelphia, Pa.

Lists of
under this
with a m
the name
Prices and
parties off
slip inclos

Chas. A.

Drill, 4-sp
Drills, 22
Drills, 25
Lathe, 16
Miller, pla
Oil separa
Planer, 36
Wet grind

Girard M

24 and 36
turret la
40 in. Gisl
26x12 Blai

Boring m
Gear shap
Planers, 2

McCoy

18 in.x10
21 in.x10
24 in.x12
24 in.x16

24 in. Gor
16 in. Sm
10 in. Put
20 in. Pra

Billet sh
Boring m
Boring m
Crane, 10
Crane, 10
Drill pre
Drill pre
Gas engi

Second-Hand Machinery.

Lists of second-hand machinery, either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. Prices and full descriptions of the machines listed will be furnished by the parties offering them for sale. If you do not find what you require, use the slip inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Chas. A. Strelinger & Co., Bates & Congress Sts., Detroit, Mich.

USED TOOLS.

Drill, 4-spindle gang, 23 in. Rockford.
 Drills, 22½ in. Kern, complete, (2).
 Drills, 25 in. Kerr, sliding head.
 Lathe, 16 in.x6 ft. Walcott, \$300.00.
 Miller, plain, No. 3 Owen, \$842.40.
 Oil separator, No. 200 Curtis, \$50.00.
 Planer, 36x36 in.x12 ft. Whitcomb, motor driven.
 Wet grinder, 18 in., \$55.00.

Send for our List of Wood Working Tools.

FOR SALE BY

Girard Machine and Tool Co., - 499 N. Third St., Philadelphia, Pa

LATHES.

24 and 36 in. Jones & Lamson flat turret lathes.	34x12 Pond.
40 in. Gisholt turret lathe.	30x10 Pond. heavy duty.
26x12 Blaisdell.	30x18 L. & S. p. h. lathe.
	42x10 Putman, dbl. b. g.

MISCELLANEOUS.

Boring mills, vertical. 30 to 60 in. Bullard.
 Gear shapers, 36 in. Fellows.
 Planers, 24 to 48 in., single and double head.

FOR SALE BY

McCoy & Brandt, - 410 House Building, Pittsburg, Pa.

LATHES.

18 in.x10 ft. Prentice, 2 heads.	28 in.x13 ft.-6 in. New Haven.
21 in.x10 ft. Johnston.	50 in.x13 ft. Niles.
24 in.x12 ft. Putnam.	60 in.x27 ft.-8 in. New Haven.
24 in.x16 ft. Putnam.	66 in.x18 ft. New Haven.

SHAPERS AND PLANERS.

24 in. Gould & Eberhardt.	60x60x16 Powell.
16 in. Smith & Mills.	96x96x16 Powell.
10 in. Putnam, sliding head.	24 in. Betts, rotary.
20 in. Pratt & Whitney.	36x36x8 Powell.

MISCELLANEOUS.

Billett shear, cap. 4 in., Lewis.	Generator, 60 k. w., Western Elec.
Boring mill, 36 in. Streit.	Hammer, 150 lbs. Jenkins.
Boring mill, 50 in. Niles.	Hammer, 800 lbs. Niles-Bement.
Crane, 10-ton Niles, electric.	Hammer, 5,000 lbs. Sellers.
Crane, 10-ton Shaw, electric.	Motor, 22 h. p. Triumph, 110 v., d. c.
Drill press, 24 in. Bickford.	Motor, 35 h. p. Western Electric,
Drill press, 24 in. Prentice.	110 v., d. c.
Drill press, 36 in. Barnes.	Ref. machine, 5-ton Cleveland.
Gas engine, 150 h. p. Bogart.	

SECOND-HAND MACHINERY

FOR SALE BY

**The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago
610 Merrill Building, Milwaukee, Wis.**

Something in this List ought to interest you. Let us know what it is.

LATHES.

- | | |
|--|---|
| 14x6 Lodge & Shipley, pat. head. | 21x10 Bradford, comp. rest, taper attachment, fine order. |
| 15x5 Star, chuck fitted. | 25x12 New Haven, c. r. and chuck. |
| 16x6 Am. Tool Wks. geared head. | 30x14 Fifield, compound rest. |
| 16x6 Bradford, compound rest. | 31x18 Bradford, c. r. and chuck. |
| 16x6 Davis c. r. (new, reduced price.) | 32x16 Davis, double back gears (new, reduced in price). |
| 16x6 L. & S. c. r., q. c. g. | 39x12 Putnam, compound rest. |
| 16x8 Lodge & Shipley, pat. head. | 18-36 in. x8 ft. Fay & Scott gap lathe. |
| 20x12 Greaves & Klusman, comp. rest, turret on shears, chuck fitted. | |
| 22x10 Flather, c. r. and chuck. | |

SHAPERS.

- | | |
|-------------------------------------|---|
| 15 in. Hendy, like new. | 18 in. Flather, single geared crank. |
| 16 in. Queen City, new, reduced pr. | 24 in. Flather, gear box drive, new, special low price. |
| 16 in. Walcott, little used. | |

PLANERS.

- | | |
|---|-------------------------------------|
| 72x72x14 Niles, 4 heads, like new. | 32x32x10 Gray, 2 heads. |
| 48x48x20 Belmer, 4 heads, rebuilt. | 32x32x12 Ohio, 2 heads. |
| 44x44x12 Pond, 2 heads. | 32x32x8 Am. Tool Works, 1 head. |
| 40x38x14 Putnam, old style, low pr. | 30x30x12 Belmer, 2 heads. |
| 36x36x12 Gray, 2 heads. | 30x30x10 Flather, 3 heads. |
| 36x36x14 Belmer, 2 heads. | 36x26x8 Whitcomb (new, reduced pr.) |
| 36x36x10 Gray, 2 heads. | 22x22x5 Whitcomb, good order. |
| 36x30x12 Sellers, old style, low price. | |

MILLING MACHINES.

- | | |
|---|------------------------------------|
| No. 3, Cincinnati, high power, all geared, single belt. | No. 2 Cincinnati pl. back geared. |
| No. 3 $\frac{1}{2}$ Waltham, bench. | No. 2 LeBlond, universal. |
| No. 13 Garvin, plain. | No. 3A Brown & Sharpe, universal. |
| No. 5 Garvin, plain back geared. | No. 2 Thurston die miller. |
| | No. 4 Becker, univ. (new, low pr.) |

UPRIGHT AND RADIAL DRILLS.

- | | |
|---------------------------------------|--|
| 2 $\frac{1}{2}$ ft. Fosdick National. | 38 in. New H. sl. hd., bk. gr., p. fd. |
| 3 ft. Fosdick standard. | 35 in. Blaisdel, sl. hd., bk. gr., p. fd. |
| 5 ft. arm Western, universal. | 28 in. Superior, b. g., p. f. & a. s. |
| 5 ft. Bickford, plain, gear box. | 25 in. Prentice Bros., sl. hd., b.g., p.f. |
| 4 ft. Bickford, plain cone. | 20 in. and smaller. |
| 6 ft. Bickford. | |

SENSITIVE DRILLS.

1 to 6 spindles, various makes.

POWER PRESSES.

- | | |
|---|--|
| No. 1 $\frac{1}{2}$ Bliss, cam drawing. | No. 4 $\frac{1}{2}$ Am. Can. Co., large die space. |
| No. 66B Niagara, double crank. | No. 3 American Can., o. b. i., 2 in. s. |
| Geared forming press. 7 ft. bet. upr. | No. 2 American Can., o. b. i., 2 in. s. |
| C94 Ferracute, armature notching. | No. 5 Niagara, o. b. i., good order. |
| 500 lbs. Mossberg auto. drop press. | No. 50 Crosby, inclinable. |

BORING MILLS—VERTICAL AND HORIZONTAL.

- | | |
|--------------------------|-------------------------------------|
| 51 in. Niles, 2 heads. | Fitchburg horizontal, 36 in. swing. |
| 10 in. Niles, 2 heads. | 34 in. Colburn, swivel turret. |
| 53 in. Colburn, 2 heads. | 42 in. Niles car wheel borer. |

CEMENT SINGLE END PUNCH AND SHEARS.

- | | |
|--|---|
| 42 in. throat, capacity 4x1 $\frac{1}{2}$ in. | Cincinnati sgl. end punch and shear. |
| Humphrey sgl. end punch and shear, | 8 in. throat, capacity 4x $\frac{1}{2}$ in. |
| 36 in. throat, capacity 1 $\frac{1}{2}$ x1 in. | |

SCREW MACHINES AND TURRET MACHINES.

- | | |
|--|---|
| No. 2 Pratt & Whitney. | 2 $\frac{1}{2}$ x26 Warner & Swazey. |
| No. 2 $\frac{1}{2}$ Pratt & Whitney. | 3x36 Jones & Lamson. |
| No. 4 B. & O. screw machine. | 22 in. Gisholt, fine condition. |
| No. 51 National-Acme automatic. | 24 in. Davis Machine Co. |
| 4 $\frac{1}{2}$ in. Cleveland automatic. | 14 turret lathes, small sizes, various makes. |
| 4 $\frac{1}{2}$ in. Cleveland automatic. | |

Bolt cut
Bolt h
Center
Cold sa
Crane, 1
Gas furn
Gear cu
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Brown

18 in. A
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24 in. x16

20x30x12
42x42x18
20 in. G

Bolt cut
Bolt cut
Boring
Tool

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14 in. H
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Grinder,
Hamme

SECOND-HAND MACHINERY

The H. A. Stocker Machinery Co.,—Continued.

MISCELLANEOUS.

Bolt cutter, 1½ in. Schlenker.	Gear hobbing machine, No. 0 S. & S.
Bolt header, 4 in.	Gear hobbing machine, No. 1 S. & S.
Centering machine, 4 in. Whiton.	Hammer, helve, 500 lb. Bradley.
Cold saw, No. 4 Birdsboro, 6 ex. saws.	Hammer, drop, 500 lb. National.
Crane, 30-ton Niles, 7½ ft. span.	Hydraulic press, 40 ton.
Gas furnace, No. 1 Stewart comb.	Hydraulic press, 100 ton with pump.
Gear cutter, 30 in. Flather.	Pipe machine, 4 in. Saunders.
Gear cutter, 50 in. Gould & E., auto.	Pipe machine, 4 in. Stoeber.
Gear hobbing machine Reynolds.	Riveter, 3-16 in. Adt.

FOR SALE BY

Western Machinery Co., 6th and Baymiller Sts., Cincinnati, Ohio.

Flat turret lathe, 2x24 in. Jones & Lamson.
 Lathe, 14 in.x6 ft. Lodge & Shipley, nearly new, with quick change gears.
 Milling machine, plain, No. 0 Le Blond, nearly new, with vise and counter-shaft complete.
 Milling machine, universal, No. 3 Cincinnati, with dividing head, complete.
 Large stock other lathes, planers, shapers, milling machines, boring mill, machine tools and machinery.

Write for descriptions and cash prices.

FOR SALE BY

Brown & Zortman Machinery Co., 2535 Liberty Ave., Pittsburg, Pa.

LATHES.

18 in. American Tool & Machine brass lathes, (2).	24 in.x14 ft. Lodge & Shipley patent head lathe.
24 in.x14 ft. New Haven.	36 in.x20 ft. Betts.

PLANERS AND SHAPERS.

30x30x12 Sellers planer.	24 in. Juengst shapers, (2).
42x42x18 Betts planer.	28 in. Juengst shaper.
20 in. Gould & Eberhardt shaper.	30 in. Morton draw cut shaper.

MISCELLANEOUS.

Bolt cutter, 1½ in. National.	Drill press, 39 in. New Haven.
Bolt cutter, 2½ in. National.	Grinder, universal, No. 2 Diamond.
Boring mill, vertical, 37 in. Amer.	Grinder, universal, No. 2 Landis.
Tool Wks., dbl. hd.	Pulley boring machine, 50 in. Niles.

FOR SALE BY

The Osborne & Sexton Machinery Co., . . . Columbus, Ohio.

LATHES.

14x 6 hol. spdl., comp. rest, (3).	18x8, 10 & 12 Hamilton, h. s., c. r.
16x10 Mueller, comp. rest, hol. spdl.	20x8&10 Hamilton, cab. legs, h.s., c.r.

PLANERS AND SHAPERS.

14 in. Hendy.	20x20x4 Industrial, single head.
20 in. Gould & Eberhardt.	24x24x6 Lodge & Davis, sgl. hd.
24 in. Queen City.	48x48x20 Belmer, 4 heads.

MISCELLANEOUS.

Boring mills, 8 & 9 ft. Betts, 3 hds.	Hammers, helve, Schatz & Dayton.
Drill, 24 in. Cincinnati, sta. head.	Miller, Grand Rapids No. 1, plain.
Drill, Fox, 3 spindle, tpg. att.	Presses, foot, No. 1 Consolidated, (3).
Drill, 4 spdl. Foote-Burt.	Presses, inc., Etna No. 11 and 12.
Gas engines, 10, 15, 25, 40 & 60 h. p.	Press, No. 73½ Blies.
Gas furnaces, Chicago, (2).	Punch and shear, 18 in. single end.
Grinder, surface, Garvin.	Pyrometer, Hoskins electric, new.
Grinder, wet tool, No. 3 Safety.	Shovel blanking rolls, Toledo.
Hammers, drop, 300, 600 and 3,000 lbs.	Threading mchies., Webster & P., (2)

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
707-715 Lakeside Av., N. W., Cleveland, Ohio
Branches: Detroit, Cincinnati, Pittsburg.

Our illustrated Booklet of Rebuilt Machine Tools sent on request.

BORING MACHINES.

- 37 in. Bullard with two heads, combination chuck table, good shape.
- 36 in. Bullard, v. t. l., in good condition.
- 30 in. Bullard swivel head, combination chuck table, in first class condition.
- 24 in. bar Binsse horizontal, late type, first class condition.
- 34 in. bar, Niles horizontal, table type, good condition.

DRILL PRESSES.

- 21 in. 2-spindle Mechanics, first class.
- 21 in. Hoefler, back geared, good as new.
- 21 in. Bickford, sliding head.
- 24 in. Hamilton, sliding head, late type, first class condition.
- 28 in. Rockford, sliding head, good as new.
- 28 in. Aurora, sliding head, back geared, power feed, first class condition.
- 26 in. New Haven, back geared, sliding head, good condition.
- 30 in. Bickford, sliding head, back geared, power feed.
- 36 in. New Haven, sliding head, back geared, A 1 condition.
- 32 in. Pond, sliding head, back geared, power feed, good condition.
- 3-spindle Foote-Burt sensitive.
- 6-spindle Foote-Burt sensitive.
- 4-spindle Pratt & Whitney sensitive.
- 4-spindle Garvin 20 in. geared drill.
- 6-spindle Quint turret, first class condition.
- 8-spindle Gardam, good condition.

DRILLS—RADIAL.

- 36 in. Fosdick, tapping attachment, first class condition.
- 42 in. Niles, round column, back geared, gear feed, half universal, A 1 cond.
- 48 in. Fosdick, gear drive and feed, tapping attachment, first class condition.
- 48 in. Prentice, plain, heavy tool, good condition.
- 48 in. Box half universal, good condition.
- 5 ft. Pond, plain, in good shape, (2).
- 6 ft. Pond, plain, gear feed, good condition.

GEAR CUTTERS.

- 36 in. Gould & Eberhardt, spur and bevel, first class.
- No. 2 Dwight Slate, capacity 8x4 in. cuts up to 12 d. p.
- 26 in. Brown & Sharpe spur gear, very good condition.
- 26 in. Fellows gear shaper.
- 48 in. Gould & Eberhardt, first class condition.
- 64x16 Gould & Eberhardt, fair condition.
- 66x14 Gould & Eberhardt spur, very good condition.

GRINDERS.

- No. 60 Heald cylinder grinders, first class, (2).
- Heald, drill, good as new; Yankee, drill, good condition.
- Blount and Gisholt tool grinders, good condition.
- Heavy foundry, good as new, double wheel.
- 10x36 Landis, plain, with internal grinding attachment, good condition.
- No. 14 Landis, internal, good condition.
- No. 2 Leland & Falconer, tool, double wheel, good shape.
- No. 3 Landis, univer-al, good condition.
- No. 3 Landis, plain, very good condition.
- No. 3 Diamond, polishing, (2).
- No. 11 Brown & Sharpe, plain, first class condition.
- No. 24 Landis, plain, with attachments, very good condition.
- 12x66 Landis plain, with crankshaft attachment, first class condition.
- Heald Ring surface grinders, good condition, (2).
- Cincinnati cutter grinder, good condition.

LATHES.

- 16x 6 Flather, plain rest, taper attachment.
- 16x 6 Reed, rise and fall rest, good condition, (2).
- 18x10 Greaves & Klusman, good as new.
- 18x8 Fay & Scott, comp. rest, late type, first class.
- 18x8 Walcott & Wood, comp. rest, first class condition.

18x 8 L
 18x10 Sch
 22x12 Pot
 22x16 Pot
 24x14 Bla
 28x14 Fie
 26x16 Pre
 24x14 H.
 36x16 Ne
 38x24 Ne
 48x34 Nil
 60x16 Fie
 Roll lath
 60x20 En

No. 1 F
 No. 3 G
 No. 3 C

15 in. Bu
 22x22x 4
 22x22x 6
 24x24x 6
 24x24x 8
 30x8 Det
 32x32x 8
 36x36x 8
 48x48x16

15 in. He
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 24 in. Wa
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No. 4 Pr
 2x24 in. J
 21 in. Gis
 21 in. Gis
 Davis 24
 24x10 Lo
 28 in. Gis

Bolt cutt
 Cold saw
 Grinder,
 Hammer
 Hammer
 Keyseat
 Keyseat
 Keyseat
 Pattern m
 Pipe mac
 Pipe mac
 Planer, p
 Riveter,
 Slotter,
 Tapper,

SECOND-HAND MACHINERY

The Motch & Merryweather Machinery Co.—Continued.

LATHES—Continued.

- 18x 8 Lodge & Davis, comp. rest, taper attachment, very good condition.
18x10 Schumacher & Boye, chuck, comp. rest, first class condition.
22x12 Pond, comp. rest, chuck, good condition.
22x16 Pond, comp. rest, fair condition.
24x14 Blaisdell, compound rest, solid spindle, fair.
28x14 Fifield, compound rest, solid spindle, fair.
36x16 Prentice, compound rest, double back geared, first class.
34x14 H. B. Fish, comp. rest lathe and chuck, good condition.
36x16 New Haven, comp. rest, fair shape.
38x24 New Haven, comp. rest, chuck jaws, attachments, good condition.
48x34 Niles, triple geared, comp. rest, raising blocks, steady rests, good cond.
60x16 Fifield, comp. rest, very good.
Roll lathe, 39 in. swing by 9 ft. centers, good condition.
60x20 Enterprise, compound rest, solid spindle, fair.

MILLING MACHINES.

- No. 1 Fynon universal, good condition, no attachments.
No. 3 $\frac{1}{2}$ Garvin plain, with arbor and vise, good condition.
No. 3 Cincinnati plain, belt feed, first class condition.

PLANERS.

- 15 in. Bush, crank, good shape.
22x22x 4 New Haven, single head, first class condition.
22x22x 6 Gray, single head, good condition, (2).
24x24x 6 Ohio, single head, first class condition.
24x24x 8 Powell, single head, good condition.
30x8 Detrick & Harvey, open side, two heads, good condition.
32x32x 8 Lodge & Davis, single head, fair condition.
36x36x 8 Sellers, spiral drive, single head, good condition.
48x48x16 Detrick & Harvey, open side, two heads, very good condition.

SHAPERS.

- 15 in. Hendey, friction, with vise, first class condition, (2).
16 in. Flather, gear box drive, latest model, first class condition.
16 in. Gould & Eberhardt, back geared, good condition, (2).
24 in. Queen City, crank, good as new.
20 in. Kelly, latest type, good as new, with vise.
20 in. Hendey, friction, first class condition, with vise.
22 in. Smith & Mills, shifting belt, first class condition.
24 in. Hendey, friction, with vise, good condition.
24 in. Smith & Mills, shifting belt, first class condition.
26 in. Cincinnati, shifting belt, very good condition.
24 in. Walcott, shifting belt, good.
30 in. Morton, draw stroke, first class.

TURRET LATHES AND SCREW MACHINES.

- No. 4 Pratt & Whitney chucking machine, fair condition.
2x24 in. Jones & Lamson, sliding head, very good condition.
21 in. Gisholt, latest type, first class condition, with equipment.
21 in. Gisholt, old type, good condition.
Davis 24x24 in. chucking machine, first class.
24x10 Lodge & Shipley turret, good condition.
28 in. Gisholt, late type, power rapid traverse, good condition.

MISCELLANEOUS.

- Bolt cutter, 2 in. Acme, good condition, with dies.
Cold saws, No. 1 Burr, very good condition, (2).
Grinder, motor driven, 12x2 in. Ransom, first class condition.
Hammer, tire welding, No. 35 Williams White, good condition.
Hammer, drop, 1200 lbs. Billings Spencer.
Keyseater, Baker No. 0, very good.
Keyseater, No. 3 Mitts & Merrill, first class condition, with equipment.
Keyseater, 18x1 $\frac{1}{2}$ in. Morton, with bars and cutters, good condition.
Pattern makers' lathes, 20 in. x8 ft. swing, (2).
Pipe machine, lathe bed type, 6 in. Saunders, in good condition.
Pipe machine, 12 in. Curtis, with dies, very good condition.
Planer, portable, Morton, electric drive, 40 in. stroke, good condition.
Riveter, pneumatic, 10 in. stroke, good condition.
Slotter, 8 in. Newton, in good condition.
Tapper, Pratt & Whitney, good condition.

SECOND-HAND MACHINERY

FOR SALE BY

The E. L. Essley Mch. Co. 817 Washington Blvd., Chicago, Ill.

A partial list of used machinery for quick delivery. We have a large stock of new machine tools not listed here. If you don't find here what you want, write us, giving sizes and detail. Our stock is changing constantly and we may have what you want.

DRILLS.

- 4 spindle Quint turret drill.
- 6 spd. No. 3 Garvin, mult., table fd.
- 20 in. S. & W., sq. base, (4).
- 4 spindle Barnes Drill Co.'s all gd. gang drill, b. g. and p. f.
- 16 in. Baker Bros. high speed, (2).
- 28 in. W. F. & J. Barnes, sliding head, complete; fine condition.
- 28 in. Hamilton, sl. hd., b. gd., p. f.
- 28 in. Kern, sl. hd., tapping att.
- 24 in. Aurora, sta. head, b. g., p. f., rebuilt.
- 25 in. Barnes sta'ry hd., b.g. and p.f.
- 2 ft. American, sensitive radial.
- Footo-Burt 4sp. No. 154, universally adj. for auto. work, fine.

ENGINE LATHES.

- 14x6 Bradford, compound rest.
- 14x6 Flather, compound rest.
- 14x6 American, plain rest.
- 14x6 American, c. r., nearly new (3).
- 15x6 Walcott, back geared, rebuilt.
- 16x6 Muller, hollow spindle, p. c. f.
- 16x8 Milwaukee, c. r., nearly new.
- 18x10 Blaisdell, plain rest.
- 18x10 Putnam.
- 20x8 Bridgeport, c. r.
- 20x10 D. W. Pond, c. r., rebuilt.
- 21x6 Lodge & D., pl. r.
- 21x10 Fifield, compound rest.
- 30x16 Fifield, c. r.

MISCELLANEOUS LATHES.

- No. 21 Garvin, plain head, Monitor, 13-16 in., hollow spindle.
- 30 in. x 8 ft. P. & W. p. hd. chucking lathe, 24 in. 4-j. chk., p. f. to t. s.
- 13 in. Gisholt, standard turret, comp.
- Pearson b. g. hub machine, like turret lathe, 2 1/2 in. h. s.
- 1-20 in. Lindahl pulley turning lathe.

PLANERS.

- 15x15x36, 1 head.
- 20x15x36 l. W. Pond, 1 head.
- 24x24x6 Whitcomb-B., 1 head, new, special low price.
- 20x17x3 New Haven, 1 head.
- 30x30x8, 1 head.
- 30x30x12 Whitcomb, 1 head.
- 30x30x16 Hamilton, 2 heads.

SCREW MACHINES—TURRET LATHES.

- No. 3 Woods tilted turret screw machine, 1 1/2 in. cap., fine order.
- No. 2 Garvin, w.f., a.c., 17-16 in. cap.
- 16 in. Lodge & D., b. g., 2 1/2 in. cap.
- No. 2 Warner & S., complete.
- No. 2 Pratt & W. screw machine.
- No. 2 Pearson, complete, 1 1/2-16 in. w. f. capacity.
- 2 in. x 24 in. Jones & L. flat turret, cone head, "D" outfit, fine order.

MISCELLANEOUS.

- Blower, steel, No. 10 Sturtevant, 7 ft high, 18 in. outlet.
- Blower, No. 6 Boston & Co., S.
- Bolt header, 1/2 in. Burdick.
- Bolt cutter, 1 1/2 in. Adams, single.
- Boring machine, 2 sp. Footo-Burt vert. adj., for auto. work, fine.
- Boring mill, 30 in. Colburn, 3j. ck.
- Boring mill, 30 in. Niles, 3 j. ck.
- Boring mill, 42 in. Bullard, 2 hds., 3-j. comb. ck.
- Cold saw, No. 4 Keystone, 4 1/2 in.
- Cold saw, No. 14 Higley, fine order.
- Cutting-off mach., 2 in. Hurlbut & R.
- Cutting-off mach., 4 in. Hurlbut & R.
- Enameling oven, for gas, 6x4 ft.
- Gear cutter, 24 in. Brainerd, s. & b.
- Gear Hobber, 12 in. No. 1 Farwell.
- Grinder, disc, No. 4 Besly, 18 in.
- Grinder, disc, No. 1 Z Besly, 12 in.
- Grinder, disc, No. 6 J. Gorton, 18 in.
- Grinder, plain, Brown & S., 12x18 in.
- Grinder, 20x3 Diamond, single wet.
- Grinder, Greenfield, tap and die.
- Hammer, steam, 1,250 lbs. Morgan, single frame.
- Hammers, drop, No. 5 Williams-W. crank lift, (2).
- Keyseater, No. 2 Davis.
- Miller, No. 2 Fox, hand.
- Miller, No. 2 Garvin, plain.
- Miller, No. 2 Kearney & T., b. gd., pl.
- Miller, 20x7x17 Osterlein, b. gd., pl.
- Miller, Grand Rapids, plain.
- Pipe mche., 4 in. Borden, complete.
- Punch press, V. & O. double crank, at. s. with power feed rolls, fine.
- Punch press, No. 15 Toledo, dp. thrt.
- Punch & shear, No. 2 Colton, dbl. end.
- 20 & 8 in. thts., cap. 1 1/2 in. rds.
- Punch & shear, New Doty comb., 4 x 1/2 in. flats, 6 in. thrt.
- Punch, No. L 10 Rock River, fly wheel, single, 10 in. th., cap. 1 1/2 in.
- Rivet spinner, 1/2 in. National.
- Riveter, 1/2 in. Shuster.
- Roll threading mche., Rudolphi & K.
- Rolls, tinners, 30 in. hand, bench.
- Shapers, 24 in. Milwaukee, b. g. fine.
- Splitting shear, Ferris & Miles, 24 in. throat, 14 in. blades.
- Tapper, No. 1 Garvin, vertical.

E. G. I.

3 spindle
4 spindle
24 in. l.
25 in. P.
30 in. F.
24 in. W.
Many o

11 in. x 5
12 in. x 5
12 in. x 6
12 in. x 8
12 in. x 22
by the
14 in. x 5
14 in. x 16
18 in. x 8
20 in. x 8
15 in. x 6
and lev
16 in. x 5
18 in. x 6
28 in. x 10
10 in. x 4
1 1/2 x 32 in.

No. 1 B.
No. 5 W.
24 in. bar
No. 2 1/2 in.

No. 1 R.
No. 3 F.
No. 1 R.
No. 13 B.
Vertical
No. 3 Be

14 in. Ro.
16 in. Ro.
16 in. Ro.

Arbor pro
Boring m
Cold saw
Grinder, p
Grinder, v
Motor, v
Pipe mac
Planer, 24
Planer, 30
Planer, 48
Punch pr
Punch pr
Punch pr
Tumbling
Large sto
Many oth
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SECOND-HAND MACHINERY

FOR SALE BY

E. G. Eldridge,

566 Washington Blvd., Chicago, Ill.

High Quality and Low Prices on the following:

DRILLS.

- 3 spindle sensitive gang, (2).
- 4 spindle W. & R. sensitive gang.
- 24 in. Lodge & Davis, back gear, power feed, sliding head.
- 25 in. P. & W., power feed, sliding head.
- 25 in. Fitchburg sliding head b. g. & p. f. drill press.
- 24 in. Wm. E. Gang, b. g. radial, with tapping attach., nearly new.
- Many other sensitive and gear driven drills.

LATHES.

- 11 in. x 5 ft. Star, plain and compound rest, new, complete.
- 12 in. x 5 ft. Reed engine lathe.
- 12 in. x 6 ft. Star q. c. g. tool room lathe, new, complete.
- 12 in. x 5 ft. Fairbanks engine lathes, c. r., h. s. etc., complete, nearly new. (2).
- 12 in.-22 in. x 34 ft. Barnes sliding extension gap lathe, over-hauled like new, by the builders.
- 14 in. x 5 ft. Hendy quick change gear tool room lathe, comp. r., with oil pan.
- 14 in.-16 in. x 6 ft. Hamilton, q. c. of feed, eng. lathe, nearly new.
- 18 in. x 8 ft. Fitchburg engine lathe.
- 20 in. x 8 ft. Flather lathe.
- 15 in. x 6 ft. American b. g. Fox Monitor lathes, chasing bar, swivel, offset and lever feed, turret, (2).
- 16 in. x 5 ft. Jones & L. pin. hd. Monitor, 1 3-16 in. hol. sp., dbl. fr. c. s.
- 18 in. x 6 ft. Bradford engine lathe, nearly new.
- 28 in. x 10 ft. Putnam heavy engine lathe, fine running order.
- 10 in. x 4 ft. Schulz spinning lathe, with relieving attachment, complete.
- 14x53 in. Schulz polishing lathe and countershaft.

SCREW MACHINES.

- No. 1 B. & S. 1/2 in. w. f. cap. semi-automatic hand screw machine, fine order.
- No. 5 Windsor, 2 in. w. f. cap., g. f. h., complete, overhauled.
- 2 in. bar cap. Foster flat turret lathe, complete, bar equipment, nearly new.
- No. 2 1/2 in. wire feed capacity P. & W. hand screw machine.

MILLING MACHINES.

- No. 1 Rockford hand miller, new, complete.
- No. 34 Fox power feed miller, new, complete.
- No. 12 Rockford plain power feed miller, new, complete.
- No. 13 Becker Brainerd b. g. pl. miller, hvy. fds., 24x12x19 in., in good order.
- Vertical profiler, about like No. 6 Becker.
- No. 3 Becker vertical milling machine, with rotary attachment.

SHAPERS.

- 14 in. Rockford s. g. crank, new.
- 16 in. Rockford s. g. crank, new.
- 16 in. Rockford b. g. crank, new.
- 16 in. Am. s. g. crank, slightly used.
- 20 in. S. & M. b. g. crk., slightly used.
- 30 in. Rockford b. g. crank, new.

MISCELLANEOUS.

- Arbor press on stand, No. 34 Greenard.
- Boring machine, vert. cyl., No. 2 Underwood, 25 in. power travel to bar.
- Cold sawing machine, 12 in. Burke.
- Grinder, plain surface, Blake & Johnson, small.
- Grinder, comb. drill, cutter and reamer and surface, Wilmarth & M. Bx.
- Motor, variable spd., 3 h. p. Gen. Elect. 230 v., d. c., 650-950 r. p. m.
- Pipe machine, 4 in. Merrill, portable, hand and power.
- Planer, 24x24 in. x 5 ft. Pond, with vise and countershaft.
- Planer, 36x36 in. x 10 ft. Whitcomb, 1 head on cross rail.
- Planer, 48x48 in. x 8 ft. Fitchburg, 2 heads on rail.
- Punch press, No. 2, 1,000 lbs., o. b. i., practically new.
- Punch press, No. 119 Crosby, 1800 lbs., open back.
- Punch press, No. 2 Stiles, 1800 lbs., solid back.
- Tumbling barrel, metal, for sheet metal stampings, Guttman adjustable.
- Large stock of Pulleys. Shafting, Hangers, etc.

Many other machines of various kinds, all fully described in our new list—just out. Write for copy. Will buy your machinery or entire shop. Our motto is "Satisfaction Guaranteed".

SECOND-HAND MACHINERY

FOR SALE BY

Joseph T. Ryerson & Son, • 16th and Rockwell Sts., Chicago

POWER PUNCHES.

- Item.
H852 Whiting 18 in. quick acting punch, capacity $\frac{1}{2} \times \frac{1}{2}$ in.
H853 Whiting double end, 15 in. throat, capacity $\frac{1}{2} \times \frac{1}{2}$ in.
H841 Badger 50 in. punch and stake riveter, capacity $\frac{1}{2}$ in. rivet, punch $\frac{1}{2} \times \frac{1}{2}$ in.
H287 Cleveland 80 in. mul. punch, cap. thirty 13-16 in. holes in $\frac{1}{2}$ in.
H638 Kraut steel plate double end 24 in. punch, capacity 1x1 in.

PLANERS.

- | | |
|--|--|
| H158 Pond, 26x26x6, 1 hd.; belt d. | H169 Sellers, 42x42x8 $\frac{1}{2}$, 2 hds.; b. dr. |
| H163 Sellers, 36x36x7, 1 hd.; belt d. | H664 Pond, 36x36x10, 2 hds.; b. dr. |
| H167 Sellers, 42x42x8 $\frac{1}{2}$, 2 hds.; b. dr. | H785 Miles, 30x30x15, 1 hd., belt'd. |

LATHES.

- H767 11x3 $\frac{1}{2}$ speed lathe, turret slide, cut-off slide.
H804 LeBlond 14x8 hollow spindle, compound rest.
H842 Von Wyck 15x6, hollow spindle, d. b. g., comp. rest.
H847 Flather 15x8, q. c. g., hollow spindle, compound rest, chuck.
H887 American 16 $\frac{1}{2}$ x6, q. c. g., taper attachment, c. r.
H894 American 15x8, q. c. g., hollow spindle, compound rest.
H859 Flather 24x10, q. c. g., hollow spindle, compound rest, chuck.
H878 American 24x12, q. c. g., hollow spindle, compound rest.
H717 Prentice 26x12 d. b. g., hollow spindle, compound rest.
H833 Putman 3 $\frac{1}{2}$ x16, heavy pattern.
H720 Jones & Lamson 2x24 turret lathe.
H744 Springfield Fox 18x6, turret on bed.
H506 Gisholt 28 in. turret, $\frac{3}{4}$ in. hole in spindle.

DRILLS.

- | | |
|------------------------------------|---------------------------------------|
| H880 Bickford 5 ft. radial. | H516 Barnes, 26 in. adj. head. |
| H879 Cincinnati, 24 in., tpg. att. | H610 Dallett No. 3, port. rope drive. |
| H832 Dwight-Slate 4 sp. sensitive. | H517 Snyder, 25 in. adj. head. |

SHAPERS.

- | | |
|-------------------------------|----------------------------------|
| H890 Averbeck 21 in. crank. | H512 Smith & Mills 15 in. crank. |
| H839 Cincinnati 24 in. crank. | H803 Hendey 24 in. friction. |
| H511 Hendey 15 in. friction. | H810 Walcott 26 in. friction. |

PNEUMATIC RIVETERS.

- H615 Allen 34 in. reach, 14 in. gap, capacity 1 in. rivets.
H605 Albree toggle, 26 in. reach, capacity 1 in. rivets.
H491 Hanna patented lever; 25 in. reach; 15 in. gap; capacity $\frac{1}{2}$ in. rivets.

MILLING MACHINES.

- | | |
|-----------------------------------|------------------------------|
| H891 Brown & Sharpe No. 2 plain. | H658 Lincoln type, 6x26 in. |
| H665 Ingersoll, slab 36x36x8. | H782 Cincinnati No. 2 plain. |
| H636 Garvin No. 4 plain, 3 feeds. | H737 Kempsmith No. 2 plain. |

MISCELLANEOUS.

- H213 Boring and drilling machine, horizontal, 4x27x60 in., Beaman & Smith.
H840 Centering machine, D. E. Whiton, revolving type.
H855 Compressor, Ingersoll-Rand, 10x10 in., with unloader.
H811 Cutter and reamer grinder, No. 3 Brown & Sharpe.
H672 Cutting-off machine, 3 in. Hurlburt & Rogers.
H893 Gear cutter, 36 in. Becker-Brainard.
H812 Grinder, No. 1 Landis universal, range 9x24.
H208 Profiling machine, No. 2 Pratt & Whitney.
H647 Screw machine, hand, $\frac{1}{2}$ in. Pratt & Whitney.
H541 Screw machine, 1 in. Cleveland automatic.
H623 Tapping machine, No. 1 Garvin automatic.

SECOND-HAND MACHINERY

FOR SALE BY

C. C. Wormer Mach'ry Co., 94-96 W. Woodbridge St., Detroit, Mich.

SPECIAL LATHES.

32 in. pulley facing, Stevens.
60 in. Stevens pulley lathe.
7x31 Stark bench lathe.
21x8 Le Blond, chucking.

3x36 J. & L. chucking turret.
14x11 single head axle.
20x7 L. & D. chucking lathe.
28x8 metal spinning lathe.

BOLT CUTTERS

1 in. National, quick opening.
No. 5 Schlenker, 3 die.

No. 12 Wells Bros.
1/2 to 1 1/2 in. Mayo.

SHAPERS.

20 in. Cincinnati, bk. gd. crank.
24 in. Steptoe, geared rack.

24 in. Lodge & Davis, geared rack.
24 in. Hendy, geared rack.

PLANERS.

20x19x4 New Haven.
20x20x4 Wheeler.
22x22x4 Wheeler.
22x22x5 Pond.
24x24x6 Hendy.
24x24x7 New Haven.

26x27x6 Wheeler.
28x28x6 Pond.
28x28x7 power feed.
30x30x14 Miles.
36x36x12 Fitchburg.
16 in. Niles boiler plate.

MILLERS.

No. 2 Cincinnati, plain.
No. 4 1/2 Brainard, plain.
No. 2 Fox, hand.
No. 2 Davis & Egan, plain.
No. 0 Le Blond, plain.

2 spindle, Beman & Smith.
No. 7 Brainard, Lincoln type.
No. 1 Cincinnati, plain.
No. 1 1/2 Hendy Norton, plain.
No. 59 Bement & Dougherty, plain.

PIPE MACHINES.

No. 1 Apex, 1/2 to 2 in.
4 to 6 in. Curtis, power.
110 Forbes, power.
No. 9 Merrill, hand power.

1 to 4 in. Armstrong, power.
No. 90 Merrill, hand and power.
No. 1 Williams, 1/2 to 2 in.
No. 2 Peerless, power.

HAMMERS.

40 lbs. Bradley, helve.
50 lbs. Koch, belt driven.
125 lbs. Bradley, strap.

150 lbs. Morgan, steam.
250 lbs. Ferris & Miles, steam.
1000 lbs. board lift.

HACK SAWS.

45 degrees, angle power.
5x5 Millers Falls, power.

No. 1 1/2 Paragon cold saw.
4x4 Goodel & Pratt.

FURNACES.

No. 18-A Acme, gas.
No. 6 Stewart, case hardening, with blower and pyrometer.

No. 6 American, soft metal.
Hinze forge and gas oven.
National oil furnace.

FANS AND BLOWERS

No. 1 American volume, 5 in. outlet.
25 in. Sturtevant exhauster.
25 in. outlet shavings exhauster.
No. 7 Sturtevant exhauster.
40 in. Sturtevant exhauster.

No. 5-V ABC volume.
50 in. Sturtevant exhauster.
70 in. Sturtevant exhauster.
60 in. Buffalo exhauster.
60 in. Fuller vent. fan.

AIR COMPRESSORS.

No. 14-C 8x14x12 Marsh, steam.
16x14x16 Marsh, steam.
6x9 Clayton, belt.
8x8 Curtis, geared drive.
No. 0 3 cyl. Spacke, belt.

6x6 Curtis, belt.
6x6 Snider-Hughes, belt.
6x6 Bury, belt.
8x8 American, belt.
6x6 Gardener, duplex.

MISCELLANEOUS.

Belt, 85 ft. of 24 in. rubber.
Boring mill, No. 0 Barrett.
Boring mill, 34 in. King, vertical.
Bulldozer, No. 0 Williams.
Countershafts, 50 sizes.
Friction clutch, 36x16 in.
Gas engine, 7x14 Springfield.
Gear cutter, No. 1 Slate, auto.
Generator, 7 1/2 k. w., 125 v.
Grinder, crank, No. 24 Landis.
Grinder, cylinder, No. 60 Heald.
Grinder, disc, No. 14 Gardener.

Grinder, ring, No. 210 Heald.
Hoisting engine, 6x8, dbl. cylinder.
Motor, 10 h. p., 220 volt.
Motor, 10 h. p., Crocker-W.
Motor, 15 h. p., Lundell.
Press, No. 2 Stiles, open side.
Press, No. 5 Stiles, stamping.
Riveter, 3-16 in. Shuster, elastic.
Scale, 30,000 lbs. Fairbanks, hopper.
Separator, oil and metal.
Slitting shear, No. 205 Niagara.
Tire welder & shear, No. 4 L. & A.

SECOND-HAND MACHINERY FOR SALE BY

**Niles-Bement-Pond Company, 111 Broadway, New York,
Located at Chicago, Boston and New York.**

LATHES.

- | | |
|---|---|
| <p>13x6 P. & W., r. & f. taper.
14x5 American, brass, Fox att.
16x8 P & W., r. & f.
18x6 Blaisdell, r. & fall.
18x6 Pond, turret tool post.
18x7 Pond, turret tool post.
18x8 Pond, comp. r.
20x8 old style P. & W.
20x10 Flather, c. r.
22x12 Niles, with taper.
24x16 Niles, c. r.
26x22 Niles, c. r.</p> | <p>28x12 Pond, compound rest.
30x14 Niles, c. r.
32x12 Pond, compound rest.
36x17 Pond, 220 v. motor drive.
36x18 Niles, c. r.
36x18 Bement, comp. r., tri. grd.
36x28 Bement, comp. r., tri. grd.
42x22 Niles, comp. r., tri. grd.
42x32 Putnam, comp. r., tri. grd.
48x16 Bement, comp. r., tri. grd.
40 in. Striet pulley lathe.</p> |
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SCREW MACHINES, TURRET LATHES, ETC.

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|--|--|
| <p>No. 3, 2 15-16 in. Niles screw nche.
2x24 Jones & Lamson, cone head.
18x 8 Flather, quick change, turret on carriage.
21 in Gisholt, turret.
24-27 Conradson semi-automatic turret, 2 3-16 in. hol. sp.
28 in. Milwaukee turret, 4 1/2 in. hol. sp.
1/2 in. Hartford automatic pin machine.</p> | <p>1/2 in P. & W. automatic screw mach.
1/2 in. P. & W. 2 sp. automatic screw machine.
1/2 in. Acme old style 4-sp. automatic.
1/2 in. single turret Spender automatic.
1 1/2 in. Gridley 1-sp. automatic.
21-32 in. No. 2 Brown & Sharpe automatic screw machine.</p> |
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BORING MACHINES.

- | | |
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| <p>30 in. tur. hd. b. & t. mill. Colburn.
37 in. Niles b. & t. mill, 2 heads.
50 in. Niles pulley borer.
56 in. Niles b. & t. mill, 2 heads.
60 in. Bement b. & t. mill, 2 heads.
72 in. Bement b. & t. mill, 2 heads.
7 ft. Pond b. & t., 2 heads.
8 ft. Michaels b. & t., 1 head.
10 ft. Pond b. & t., 2 heads.</p> | <p>2 in. sp. Kelly hor. bor. and drill.
3 1/2 in. sp. Bement hor. bor. & drill.
Bement cylinder borer, 7 1/2 in. bar for 36x78 or smaller cylinders.
96 in. swing x10 ft. centers bor. & facing; weight: about 43,000 lbs.
5 in. diam. spindle Niles floor boring, drilling and milling machine.</p> |
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UPRIGHT AND SENSITIVE DRILLS.

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| <p>13 in. 1 sp. sensitive, motor d., 110 v.
10 in. 2 sp. sensitive, Slate.
10 in. 3 sp. sensitive, Slate.
10 in. 3 sp. sensitive, Signourney, spindle double column sensitive, Langelier.
17 in. 4 sp. gang, Jones & L.
18 in. stationary hd., plain, Niles.</p> | <p>28 in. sliding head, Pond.
30 in. sliding head, Putnam.
36 in. sliding head, Gould & E.
48 in. sliding head, Niles.
10 sp. adjustable R. & W., capacity 1 1/2 in. holes in 37 in. circles, belt or motor; weight: 30,000 pounds.</p> |
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RADIAL DRILLS.

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| <p>2 1/2 ft. semi-radial, Hilles & J.
4 1/2 ft. semi-radial, Barr.
4 ft. Niles, plain.
4 ft. Niles, univ.
5 ft Niles, plain.
5 ft. plain, belt or motor, Pond.</p> | <p>5 ft. 6 in. universal, Niles.
6 ft. plain, belt or motor, Pond.
6 ft. 10 in. semi-universal, Niles.
7 ft. 6 in. full universal, Niles.
Univ. portable radial, Prentice.</p> |
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MILLERS AND GEAR CUTTERS.

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| <p>No. 2 hand P. & W., 16x7 table.
24x7 table, plain, Becker.
43x9 1/2 No. 3 Cincinnati plain, b. g.
Single sp. profiler, 21x24 in. table, Garvin.
No. 3 univ., old style, Cincinnati.</p> | <p>6x14 thread miller, P. & W.
30 in. spur gears, Gould & E.
36 in. spur gears, Pond.
72 in. spur gears, Niles.
84 in. spur gears, Niles.</p> |
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RAILROAD MACHINERY.

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| <p>48 in. car wheel borer, Niles.
42 in. car wheel lathe, Niles, belt or motor.
46 in. car wheel lathe, Bement.
70 in. single dr. wheel lathe, Sellers.
Niles double axle lathe.</p> | <p>90 in. extra heavy wheel lathe, Niles, motor.
Bement double axle lathe.
Putnam double axle lathe, ex. heavy.
48 in. 150 ton wheel press, Niles.</p> |
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SECOND-HAND MACHINERY

Niles-Bement-Pond Company—Continued.

PLANERS.

17x17x4 Whitcomb.
22x22x6 Harrington.
26x26x7 Niles, heavy type.
26x23x16 Miles, 2 hds.
30x30x11 Niles, 1 hd.
30x30x6 Pond, 1 hd.
30x30x24 Sellers, 2 hds.
32x32x12 Pond, 2 hds.
32x32x14 Pond, 2 hds.
36x36x20 Pond, 3 hds.
40x40x26 Pond, 4 hds.

42x42x14 Woodward & P., 4 hds.
42x42x20 Miles, 3 hds.
48x48x16 Pond, 4 hds., heavy, 230 v. motor.
48x48x20 Sellers, 3 hds.
50x50x18 Gleason, 2 hds.
62x62x20 Pond, 4 hds.
72x60x20 Niles, 2 hds.
86x86x30 Pond, 4 hds.
86x86x35 Pond, 4 hds.

SHAPERS AND SLOTTERS.

10 in. crank shaper, Miles.
12 in. crank shaper, Bement.
16 in. sing. gear crank, Gould & E.
16 in. down feed, 220 v. motor drive, Stockbridge.
18 in. double trav. head, Cincinnati.
18 in. crank shaper, Bement.

32 in. triple grd. rack, Cincinnati.
12 in. crank slotter, Betts.
12 in. crank slotter, Bement.
14 in. crank slotter, Niles.
18 in. crank slotter, Bement.
20 in. crank slotter, Bement.

MISCELLANEOUS.

Bolt cutter, 1 in. Standard.
Bolt header, 2 in. Blakeslee.
Cut-off machines, 2½ in. Betts.
Cut-off machine, 4½ in. Starr.
Cut-off saw, bar 16 in. diam.
Grinder, drill, 3 in. Sellers.
Grinder, 5x32 in. Laudis, plain.
Grinder, 18x168 in. Norton, plain.

Keyseat miller, Burr, horizontal and vertical spindles, table 6 ft. long, arranged for motor.
Punch & shear, dbl., Hiles & J., 30 in. throat, motor, cap. 1½ in. 1½ in.
Steam hammer, 600 lbs. Bement.
Tire bending rolls, 4 in. diam.

FOR SALE BY

Frevert Machinery Co.,

38 Vesey St., New York City

Grinder, cutter, No. 1 Cincinnati, pl.
Grinder, 9x26 in. universal.
Grinder, wet tool, No. 2 Diamond.
Grindstone frame, on wheels, 48x6 in.
Miller, No. 2 Garvin Lincoln.
Pinion and gear cutter, No. 1 Slate, automatic.
Press, No. 18 Bliss, inclined.

Profiler, Garvin, 1 spindle.
Riveter, 1 in. Shuster.
Screw mche., 13-32 in. B. & S., auto.
Screw machine., 7-16 in. Cleveland, automatic.
Screw machine, hand, No. 2 P. & W.
Shaper, crank, 18 in. Ohio.
Turret lathe, 2x24 in. Jones & L.

FOR SALE BY

The Randle Machinery Co.,

1739 Powers St., Cincinnati, O.

BOILERS.

Horiz. tubular, from 6 to 150 h. p.
Fire box, from 8 to 80 h. p.
Vertical, from 3 to 50 h. p.

ENGINES.

Corliss, from 50 to 350 h. p.
Automatic, from 15 to 180 h. p.
Throttlng, from 5 to 225 h. p.

LATHES.

60 in. Stevens, pulley.
15 in. x 6 ft. LeBlond screw cutting.

ELECTRIC GENERATORS.

120 k. w., belted.
20 k. w., direct connected.
18 k. w., belted.

MOTORS.

All sizes and kinds.

PLANER.

36x36 Gray.

GASOLINE ENGINES.

35 h. p., Auglaize.
25 h. p., Dean; small sizes also.

MISCELLANEOUS.

Heaters, tanks, pumps, exhausters, electrical, saw mill and general machinery.

Write for list. Also a full assortment of new machinery.

Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps.

SECOND-HAND MACHINERY

FOR SALE BY

O. L. Packard Machinery Co.,

Milwaukee, Wis.

LATHES.

14x6 Hamilton, c. r., power cross fd., hollow spdle., a modern tool.....	\$ 225.
24x12 American, 2 sets raising blocks.....	750.
72x22 comp. rest, with raising blocks to swing 120 in.....	1000.
15 in. turret lathe.....	150.

PLANERS.

24x24x5, 2 heads on cross rail.....	\$500.
36x36x10.....	\$850.

MISCELLANEOUS.

Bevel shear, Thomson, 8 in. boiler plate.....	\$ 100.
Boring mill, 30 in. Bullard, full universal, 4 hole turret on cross rail.....	950.
Lathe, 15 in. Garvin Monitor.....	250.
Pipe machine, No. 8 Merrell.....	300.
Punch press, inclinable, No. 30 Perkins.....	105.
Screw machine, 4 in. P. & W., automatic.....	375.
Screw machine, 1 in. Drees, complete, has seen but very little wear.....	275.
Shaper, 2 spindle, wood top, good order.....	50.
Spinning lathe, 16x5.....	45.

FOR SALE BY

A. D. White Machinery Co.,

108-114 N. Jefferson St., Chicago

LATHES.

13x5 P. & W., taper and chucks.	18x8 American, latest pat.
14x5 Reed, taper, 2 chucks.	20x10 Fay & Scott, c. r.
16x8 Fletcher, 2 chucks.	28x14 Fifield.
18x8 Rahn-Carpenter.	30x10 Powell.

DRILLS.

18 in. Blaisdell.	30 in. Kerkhoff, sliding head.
23 in. Hamilton.	30 in. Bickford, sliding head.
28 in. Bickford, sliding head, (4).	32 in. Bickford, sliding head.
28 in. Aurora, sliding head.	3 ft. Bickford radial, cheap.

PLANERS.

24x 6 Gray, 1 head (2).	32x8 Betts, 1 head.
24x 6 Pond, 1 head.	36x10 Gray, 2 heads.
25x 6 Sellers, spiral drive.	36x12 Cincinnati, 2 heads.
26x 6 Gray, 1 head.	38x10 Gray, 1 head, fine.
26x 8 Gray, 1 head (2).	52x25 Betts, 1 head.
28x 8 Gray, 1 head (2).	

SCREW MACHINES AND TURRET LATHES.

16 in. No. 3 Pearson screw machine.	3 in. P. & W., automatic.
No. 2 1/2 Pratt & Whitney sc. mche.	13 in. Drees turret lathe.
No. 3 Pratt & Whitney sc. mche.	16x5 Fletcher turret lathe.
1 in. Cleveland, automatic.	18 in. Drees turret lathe.
1 in. Pratt & Whitney, automatic (4).	18 in. D. & E., fr. hd., 2 step cone.
1 in. Cleveland, semi automatic.	5 1/2 in. belt turret lathe.

PUNCH PRESSES.

No. 2-A R. & K., inclinable.	No. 58 Toledo, 6 in. stroke.
No. 2 R. & K., o. b. i. (6).	No. 53 Ferracute, solid back.
No. 4 Toledo, o. b. i.	No. 68 N. Bliss, double action.
No. 19 Bliss inc., (2).	

MISCELLANEOUS.

Boring and facing machine, No. 1 Beaman.	Hammer, 2,000 lb. American.
Die slotter, Garvin, like new.	Keyseater, No. 2 Catlin.
Gear cutter, No. 13 B. & S.	Keyseater, 16 in. Morton.
Grinder, cutter, H. G. Barr.	Miller, No. 1 B. & S. universal.
Hammer, power, 35 lb. Justice.	Miller, No. 25 Brainerd, b. g.
Hammer, power, 50 lb. Dienelt.	Shaper, 14 in. P. & W., univ. vise.
Hammer, drop, 200 lb. Norton.	Shapers, 16 in. Smith & Mills (2).
	Shaper, 18 in. Henderson, b. g.

Are getting out new list, with prices that will surprise you. Write for it.

J. J. Mc

Bending
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Lathe, 8
Lathe, 7
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SECOND-HAND MACHINERY

FOR SALE BY

J. J. McCabe,

30 Church St., New York City.

Bending rolls, heavy pattern, 10 ft. between housings, drop housing, Hilles & Jones.

Lathe, 84 in. swing, heavy, triple-gearcd.

Lathe, 70 in.x21 ft. triple-gearcd, Fitchburg.

Lathe, 50 in.x26 ft. Niles.

Lathe, 48 in.x24 ft. triple-gearcd, Fitchburg.

Lathe, 38 in.x26 ft. with raising blocks to 50 in., Fifield.

Lathes down to 14 in. swing, all sizes and makes.

Milling machine, planer type, 30 in.x9 ft., Niles Tool Works.

Milling machines, other sizes and styles, all standard makes.

Multiple drill, 14-spindle, heavy, speed-box type, Baush Co's.

Multiple drill, 8-spindle, Western Co's.

Planer, 120x120 in.x18 ft., Niles, 4 heads.

Planer, 72x72 in.x14 ft., Niles-Bement-Pond, 4 heads.

Planer, 70x70 in.x25 ft., Pond M. T. Co's, 4 heads.

Planers down to 16 in. in width, all lengths.

Punch and shears, 48 in. throat, single, interchangeable, Hilles & Jones.

Punch and shears, 25 in. throat, double, weight 25,000 lbs., Hilles & Jones.

Radial drill, 7 ft. arm, half-universal, swivel head, Bement.

Radial drill, 6 ft. arm, full-universal, with motor, practically new.

Radial drill, 5½ ft. arm, plain, Prentice Bros. Co's.

Radial drills down to 2½ in. arm, all sizes.

Slotter, 16 in. stroke, Bement-Miles.

Slotter, 13 in. stroke, Bement-Miles.

Turret lathe, 32 in. heavy pattern Gisholt (American type).

Turret lathe, 24 in. swing, with chuck and tools, Gisholt.

Turret lathe, 22 in. swing double turret lathe, Potter & Johnston.

Upright boring mill, 14-20 ft., extension type, 2 hds. on crossrail, with motor, complete, Niles-Bement-Pond, in A-1 condition.

Upright boring mill, 10 ft. swing, 2 hds. with motors, Pond M. T. Co's.

Upright-boring mill, 7 ft. swing, 2 hds., belt drive, Niles Tool Works.

Upright boring mills down to 2½ ft. swing, all standard makes.

Other desirable tools: Railroad Tools, Boiler Shop Tools, Horizontal Boring Machines, Shapers, Hammers, Bolt and Nut Machines, etc.

ENTIRE SHOP EQUIPMENT.

We are also selling out the entire equipment of a prominent shop here, and list includes:

Boring, drilling and tapping machines, horizontal, Beaman & Smith, 3 in. spindle.

Boring and turning mill, upright, Bullard Co., 30 in. swing, turret head.

Boring and turning mill, upright, Bullard Co., 37 in. swing, turret head.

Boring and turning mill, Bullard Co., 42 in. swing, double head.

Gear cutter, spur and bevel, 36 in. Gould & Eberhardt.

Gear cutter, spur, 26 in. Brown & Sharpe, full automatic.

Gear hobbing machine, spur and spiral, 20 in. Standard pattern.

Lathe, 18 in. Hendey, 8 ft. bed.

Lathe, Reed Co., 22 in. swing, 8 ft. bed.

Lathe, Draper Co., 22 in. swing, 12 ft. bed.

Lathe, Pond Co., 25 in. swing, 12 ft. bed, heavy.

Milling machine, vertical, Brown & Sharpe No. 5, table 53x16 in.

Multiple drill, Baush Co., 14 spindle, speed box.

Multiple drill, Western Co., 8 spindle, Standard.

Multiple drill, Niles Co., 4 heads, heavy pattern.

Planer, 22 in. Pratt & Whitney, 5 ft., 1 head.

Planer, 27 in. Pratt & Whitney, 8 ft., 1 head.

Planer, 30 in. Gray Co., 10 ft., 2 heads.

Planer, 32 in. Pond Co., 8 ft., 2 heads.

Radial drill, Prentice Bros. Co., 4 ft. arm, gear speed chains.

Radial drill, Niles Tool Works, 4 ft. arm, half universal.

Turret lathe, 2x24 in. Jones & Lamson "New Style" flat turret.

Turret lathe, Gisholt, 24 in. swing, complete with chucks and tools.

Turret lathe, American, 32 in. swing, chuck and tools.

Turret lathe, double, Potter & Johnston, 22 in.

Upright drill, Prentice Bros. Co., 42 in. swing, sliding head.

SECOND-HAND MACHINERY

FOR SALE BY

W. L. Perkins, Jr. & Co.

30 Church St., New York

LATHES.

12x5 Reed, plain, rise and fall rest.
16x6 Flather, plain rest, hol. spindle.
16x8 Porter, c. r., hollow spindle.
18x8 Hendey, c. r., hollow spindle.
18x8 Reed stud lathe.

22x10 Harrington, c. r.
28x12 Prentiss, c. r.
28x16 New Haven, c. r.
30x15 Sellers, c. r.
48x12 Harrington, c. r.

SHAPERS—

12 in. Sellers, double trav. heads.
15 in. Kelley, single geared crank.
16 in. Springfield, single gd. crank.
20 in. Smith & Mills, sgl. gd. crank.
24 in. Walcott, single geared crank.

PLANERS.

17x17x32 Bement, crank.
20x20x 4 Pease, single head.
26x26x 6 Putnam, single head.
32x32x 8 Pond, double head.
37x37x26 Miles, two heads.

MISCELLANEOUS.

Band saw sharpener, automatic.
Boring mill, horiz., No. 2 Bement.
Boring mill, vertical, 42 in. Bullard.
Flat turret, 2x24 in. Jones & Lamson.
Miller, univ., No. 3 Cincinnati.
Radial, plain, 5 ft. Prentice.
Screw machine, 1 in. Meriden.

Screw mch., 1 1/2 in. Nat.-Acme, auto.
Screw mch., 1 1/2 in. Pratt & Whitney.
Slotter, 12 in. Sellers, all feeds.
Turret lathe, brass, 13x6 American.
Turret lathe, 1 in. Bardons & Oliver.
Turret lathe, 24 in. American.
Valve miller, No. 1 Newton.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.

St. Louis, Mo.

LATHES.

14x6 Bradford.
14x6 Lodge & Davis.
16x7 Pratt & Whitney.

26x16 Niles.
36x12 fair condition.
48x40 double head, column facing.

MILLING MACHINES.

42x36 in. x9 ft. Ingersoll slab miller, horizontal spindle.
Universal milling machine, table 40 in. x10 in., 3 T slots, dividing head, rotary table, slotting attachment and cutters.

PLANNER AND SHAPER.

16 in. Smith & Mills shaper.

24x24x6 ft. N. H. planer.

AIR COMPRESSORS.

8x8 Curtis, belted.
10x12 Curtis, belted.
10x10x10 steam driven.
960 cu. ft. Norwalk.

10x12x10 steam driven.
14 and 9x8 compound belted.
11x11x12 Westinghouse.

GASOLINE ENGINES.

20 h. p. Jacobson.
28 h. p. Fairbanks-Morse.

32 h. p. Fairbanks-Morse.
35 h. p. St. Marys.

STEAM ENGINES.

8x8 vertical.
10x10 Atlas.

14x24 slide valve.

STEAM PUMPS.

6 and 12x8x12 Smith-Vaille.
16 and 26x12x18 Gordon, compound.

22x14x24 Dean.

MISCELLANEOUS.

Air tanks, (2).
Band saw, 36 in.
Belting, 60 ft. 12 in. double leather.
Bending rolls, 7 in. dia., 8 ft. long.
Blower, positive pres., 2 1/2 in. outlet.
Bolt cutter, 3 1/2 in., quick opening hd.
Bolt cutter, Wells.
Bolt header, 1 in.
Boring mill, vertical, 4 ft.
Drill, 6 spindle Quint.
Drill, 60 in. Bickford, goose neck.
Gas furnace, Chicago.

Grinder, twist drill, American.
Hammer, vacuum, 80 lb. Yeakley.
Keyway cutter, Morton, cap. 2 in.
Pipe mche., 8 in. Bignall & Keeler.
Pipe mche., 12 in. Bignall & Keeler.
Press, No. 1 1/2 Bliss, toggle drawing.
Riveter, pneumatic, 48 in. reach.
Screw machines, Garvin No. 1.
Splitting shear, 48 in. cap., 1 in. plate.
Squaring shears, power, 42 in.
Traveling crane, 10 ton, 21 ft. span.

Rumely-

9 in. Brown.
10 in. LeBlond.
12x34 in. f.
14x8 Perk.
15x6 Walc.
relieving
16x8 Henc.
16x8 Porte.
16x6 Lodg.
16x6 LeBl.
16x6 Walc.
16x8 LeBl.
220 volt.
16x10 LeBl.
16x10 Blais.

1 spindle l.
3 spindle l.
3 spindle l.
4 spindle l.
18 in. Bak.
20 in. Bar.
20 in. Bar.

2 1/2 ft. arm.
2 ft. arm.

16 in. Lath.
22x14x4 P.
22x22x5 W.
24x24x5 P.

No. 1 Pra.
No. 1 Bar.
chines, 1
1 1/2 in. new
turret la

Niles, 2 1/2 in.

No. 26 Be.
No. 3 Le B.
No. 1 Cinc.
No. 16 Ga.
No. 1 Pra.

16 in. Acm.
16 in. Ohio.

Le Blond,
No. 22 La.
No. 20 La.

No. 3 Cro.
No. 4 R. &
No. 2 R. &
No. 30 A.

Bolt cutter.
Bolt cutter.
Cutting-off
Drill, port.
Drill, port.

SECOND-HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 121 N. Jefferson St., Chicago, Ill.

LATHES.

9 in. Brown & S., univ. hand lathe.
10 in. LeBlond reducing lathe.
12x34 in. foot power speed lathe.
14x6 Perkins.
15x6 Walcott, c. r., taper attachment, relieving attachment.
16x6 Hendey.
16x6 Porter.
16x6 Lodge & S., quick change.
16x6 LeBlond, standard.
16x6 Walcott, c. r., geared feed.
16x8 LeBlond, standard, motor dr., 220 volt, d. c.
16x10 LeBlond, standard, c. r.
16x10 Blaisdell.

18x8 LeBlond, turret on carriage.
18x8 Walcott, c. r.
18x10 Wright.
20x8 LeBlond, dbl. fr. bk. gear, pwr. fd., tur. on shear, pan and pump.
20x10 LeBlond, p. f. tur. on shear.
20x10 LeBlond, q. c. g., c. r.
20x14 LeBlond, standard, c. r.
24x 8 LeBlond, quick change.
24x10 LeBlond, standard.
24x12 New Haven.
24x24 Fifield.
28x12 New Haven.
36x12 Schumacher & Boye.
36x14 Fifield.

UPRIGHT DRILLS.

1 spindle Barr, sensitive.
3 spindle Reed.
3 spindle Sigourney.
4 spindle National turret.
10 in. Baker Bros.
20 in. Barnes, lever feed.
20 in. Barnes, w. & l. f., b. grd.

20 in. Barnes, sq. base, w. l. pr. f. b. grd.
24 in. Lodge & Davis, sliding head.
24 in. Schumacher, complete.
26 in. Aurora, sliding head.
34 in. Barnes, sliding head.
40 in. Lodge & D., sl. head.

RADIAL DRILLS.

2 ft. arm, Fosdick.
2 ft. arm, Fosdick.

3 ft. arm, Bickford.

PLANERS.

16 in. Lathe & Morse crank planer.
22x14x4 Pratt & Whitney.
22x22x5 Wheeler.
24x24x5 Pease.

24x24x5 Cincinnati.
30x30x8 Whitcomb.
30x30x8 Putnam.
36x36x15 Powell.

TURRET LATHES.

No. 1 Pratt & W. screw machine.
No. 1 Bardons & Oliver screw machines, w. f. 13-16 in.
14x18 new model Pratt & Whitney turret lathe, w. f.

8 in. Brown & S. auto screw mach.
18x6 Lodge & Davis, f. b. g.
18x6 Fox, square arbor.
21 in. Gisholt.
24 in. American.

HORIZONTAL BORING MILLS.

Niles, 2 ft. in. bar, 4 ft. table.

MILLING MACHINES.

No. 26 Becker, pl., index centers.
No. 3 LeBlond, plain, all feeds.
No. 1 Cincinnati, plain.
No. 16 Garvin, plain.
No. 1 Pratt & Whitney, power.

No. 6 Whitney hand miller.
No. 7 Becker, Lincoln.
No. 14 LeBlond, plain.
36x42x8 Ingersoll slab miller, 3 in.
No. 5B Becker, vertical.

SHAPERS.

16 in. Acme, back gd. crank.
16 in. Ohio.

18 in. Barker, crank.
22 in. Walcott.

GRINDERS.

Le Blond, cutter & reamer.
No. 22 Landis, plain, 12x22 in.
No. 20 Landis, plain, 10x20 in.

Landis, plain, 18x30 in.
Gisholt, universal tool.
No. 2 Landis, univ; No. 2 Partridge.

PUNCH PRESSES AND SHEARS.

No. 3 Crosby, solid back.
No. 4 R. & K. open back inclinable.
No. 2 R. & K. open back inclinable.
No. 30 A Perkins, open bk. inc.

No. 15 Buffalo hand punch.
Drombacker hand lever splitting shear.
22 in. Toledo power squaring shear.

MICELLANEOUS.

Bolt cutter, 14 in. Economic.
Bolt cutter, 24 in. National.
Cutting-off machine, 44 in. P. & W.
Drill, portable, No. 3 Dallett.
Drill, portable, No. 4 Dallett.

Hammer, 400 lb. American, steam.
Hammer, 50 lb. Bliss, drop, lifter.
Pipe machine, 4 in. Bignall & K.
Saw table, Colburn.
Screw press, Bliss.

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co.,

215 S. Clinton St., Chicago, Ill.

One lot heavy Construction Iron and Boiler Working Machinery, as follows:

Air riveter.
Beam shear.
Bolt and pipe threader.
Bulldozer.
Chain hoists.

Compressors.
Crane derrick.
Drop hammer.
Hammer.
Punches and shears, heavy.

And 100 other iron and woodworking machines, motors, etc., etc.

FOR SALE BY

Frank Toomey, Inc.,

127 N. Third St., Philadelphia, Pa.

HAMMERS AND RADIAL DRILLS.

800 lb. Bement Miles & Co., single frame hammer.

36 in. Morris radial drill.

LATHES.

12x5 Hendey-Norton, tool room.
12x6 Hendey-Norton, tool room.
14x7 Lodge & S., geared head.
16x6 Davis.

16x8 Bradford quick change gear.
48-72x14 Harrington extension bed gap lathe.

Foster & Kimball turret, (several).

MISCELLANEOUS.

Boring mill, 36 in. Bridgeport, sgl. hd.
Grinder, oscillating surface, Springfield No. 5.

Planer, 36x36x12 Sellers, 3 heads.
Press, PG-5 Ferracute.

Miller, full univ., No. 2 Cincinnati.
Miller, full univ., 20x7x17 in. Oester.

Punch and shear, combination, Sellers, 30 in. gap, capacity 1 1/2 in. hole in 1 1/2 in. material and shear 1 1/2 in.

Miller, slab, 36 in x12 ft., heavy.
Miller, vertical, No. 22 Garvin.

Shaper, 24 in. Queen City, back gd.
Shear, sgle. end, 50 in. gap, engine dr.
Turret lathes, No. 14 Garvin (?).

Planer, 26x26x6 Niles
Planer, 33x33x12 Woodward & Powell.

FOR SALE BY

Colcord-Wright Machinery & Supply Co.

St. Louis, Mo.

LATHES.

11 x 6 Rockford, c. r.
14 x 6 Sebastian, c. r.
14 x 6 Bradford, c. r., q. c.
15 x 6 Von Wyck, c. r., turret on shear, (2).
16 x 6 LeBlond, c. r.
16 x 8 Hendey, p. r.

18 x 8 Rahn Carpenter, c. r.
20 x 6 Flather, p. r.
20x14 American, comp. rest & taper.
22 x 8 Pond, c. r.
22x14 American, comp. rest & taper.
32x10 New Haven, c. r.
38x20 New Haven, compound rest.

PLANERS AND SHAPERS

15 x 15 x 36 New Haven.
24 x 24 x 6 Gray.
24 x 24 x 6 Industrial.

30 x 30 x 8 Flather.
36x36x12 Gray.
14 in. Steptoe, crank.

MILLING MACHINES.

Small B. & S., plain.
No. 21 Garvin, plain.
No. 25 Brainard, plain.
No. 13 1/2 Garvin, plain.

No. 13 Brainard, universal.
No. 14 1/2 Brainard, universal.
No. 1 1/2 Cincinnati, universal.
24x24 in. x 6 ft. Ingersoll, vertical.

BRASS WORKING MACHINERY.

10 x 4 Wells speed lathe.
14 x 5 hand, Fox, slide rest.

15 x 5, square arbor.
16 in. Dreses, universal.

MISCELLANEOUS.

Blower, No. 2 Roots.
Boring machine, hor., 4-sp. Newton.
Cutter grinder, Cincinnati.
Cutter grinder, Wells.
Drills, 26 in. Rockford, b. g., p. f.
Drill, plain radial, 4 ft. Dreses.
Furnace, combination, Stewart.
Grinder, No. 3 Landis.

Hammer, power, 80 lb. Perfect.
Hammer, board drop, 200 lb. Toledo.
Pipe machine, 2 in. Jarecki.
Press, C-2 Ferracute.
Press, No. 35 Swaine.
Press, P-2 Ferracute.
Turret lathe, 2 x 24 J. & L.

Frentiss

9x44 Star.
11x 5 Cha.
12x 6 LeB.
12x 5 Pre.
14x 5 Rec.
14x 6 Rec.
16x 6 Pr.
16x 8 Sch.
16x 6 Port.
16x 8 Port.
16x 8 Bull.
18x 7 Hen.
18x 6 Lod.
p. c. f., t.
18x 8 Rec.
20x10 Drap.
22x10 Bull.
22x10 Gleas.

No. 1 Cinc.
No. 2 Owe.

7-spindle S.
4 spindle H.
Style F, 12.
4 spindle F.

15 in. Hend.
16 in. Stept.
14 in. Jueng.

No. 1 White.
No. 1 Slate.

and 8 in. C.
in. No. 52.
1 1/2, 1 1/2 &
14 in. Wind.
2x36 Pratt S.

15x15x 3 Pr.
2x22x 4 Po.
3x24x 6 Fi.
3x24x 6 Pe.
3x26x 5 Ne.

3 lb. Dupor.
10 lb. Bradle.

Boring mill.
Boring mill.
Boring mill.
Boring mill.
Boring mill.
Cylinder bor.
Fan, exhaust.
Grinder, disc.
Grinder, cyli.

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

LATHES.

9x44 Star, plain rest, p. c. f.
12x 8 Champion, c. r., p. c. f.
12x 8 LeBlond, quick change, c. r.
12x 8 Prentice Bros., c. r., p. c. f.
14x 8 Reed, rise & fall, p. c. f.
14x 8 Reed, compound rest, p. c. f.
16x 8 Pratt & Whitney, c. r., p. c. f.
16x 8 Schumacher & Boye, c. r., p. c. f.
16x 8 Porter, c. r., p. c. f.
16x 8 Porter, c. r., p. c. f.
16x 8 Bullard, compound rest, p. c. f.
18x 7 Hendey-Norton, quick change.
18x 8 Lodge & D., compound rest,
p. c. f., taper.
18x 8 Reed, c. r., p. c. f.
20x10 Draper, c. r., p. c. f.
22x10 Bullard, compound rest, p. c. f.
22x10 Gleason, c. r., p. c. f.

26x12 Fish, compound rest, p. c. f.
27x12 Pratt & Whitney, comp. rest.
30x12 Niles, c. r., p. c. f.
26x22 New Haven, compound rest.
28x12 Putnam, c. r., p. c. f.
30x12 Johnson, c. r., p. c. f.
30x16 Fay & Scott, c. r., p. c. f.
36x14 Lodge & Shipley, c. r., p. c. f.
36x16 Reed, compound rest, p. c. f.
38x20 Fay & Scott, compound rest.
40x18 Newark, triple geared.
46x38 Fitchburg, triple geared.
54x20 compound rest, p. c. f.
103x35 Bement, triple geared.
54 in. Niles wheel lathe.
16 in. x10 ft. auto. threading lathe.
60 in. Stevens pulley lathe.

MILLERS.

No. 1 Cincinnati, universal.
No. 2 Owen, plain, b. g.

No. 1 Milwaukee, universal.
8 ft. Beaman & Smith, planer type.

DRILLS.

7-spindle Slate, gang.
4-spindle Henry & Wright.
Style F, 12 in. Baker Bros.
4-spindle Foote-Burt, adj. rail.

3-spindle Barnes, gang.
36 in. Bickford radial, b. g., tap. att.
10 spindle Gardam, adjustable.

SHAPERS.

18 in. Hendey, friction.
16 in. Steptoe, crank, b. g.
14 in. Juengst, horizontal crank.

18 in. Putnam, friction.
26 in. Lodge & Davis, shifting belt.
24 in. Gould & Eberhardt crank.

GEAR CUTTERS.

No. 1 Whiton spur & bevel.
No. 1 Slate, auto. pinion cutter.

24 in. Brainerd, spur and bevel.
27x7 Gould & Eberhardt, spur only.

SCREW MACHINES.

1 and 2 in. Garvin, wire feed.
1 in. No. 52 National-Acme, auto.
1 1/2 in. & 2 in. P. & W., auto.
14 in. Windsor set-over Monitor.
20x Pratt & Whitney.

No. 2 Warner & Swasey, wire feed.
1 1/2 in. Pratt & Whitney.
No. 6 2 1/2 in. W. & S., wire feed.
1 in. No. 3 Pratt & Whitney, wire fd.
1 1/2 in. Bardons & Oliver, cone feed.

PLANERS.

18x15x 3 Pratt & Whitney, 1 head.
22x22x 4 Powell, 1 head.
24x24x 6 Flather, 1 head.
26x24x 6 Pease, 1 head.
26x26x 5 New Haven, 1 head.

30x30x10 Gleason, 1 head.
30x30x 7 Wheeler, 1 head.
38x38x 8 Gleason, 1 head.
41x41x12 Newark, 1 head.
60x60x12 New Haven, 1 head.

HAMMERS.

35 lb. Dupont, trip.
50 lb. Bradley, compact.

200 lb. American, steam.
400 lbs. Stiles, board drop.

MISCELLANEOUS.

Boring mill, 24 in. bar, Bement.
Boring mill, 61 in. Bausch & Harris.
Boring mill, 44 in. Rogers.
Boring mill, vert., 50 in., Niles.
Boring mill, vert., 37 in. Bullard.
Cylinder borer, Beaman & Smith.
Fan, exhaust, 50 in. Buffalo.
Grinder, disc, No. 1 Besly.
Grinder, cylinder, No. 60 Heald.

Grinder, plain, 12x42 Landis.
Grinder, surface, Walker.
Pipe machine, 4 in. Saunders.
Press, 2 in. stroke, adjustable bed.
Press, No. 4 Mossberg & G., inc.
Shear, squaring, 30 in. Niagara.
Slotter, 13 in. Bement.
Tumbling barrel, 30x24 Smith.

Send for latest complete List.

SECOND-HAND MACHINERY

FOR SALE BY

The Lake Erie Nail & Supply Co., (Machinery Dept.)
408-412 Frankfort Ave., N. W. Cleveland, Ohio

LATHES.

14 x 6 Bradford, hollow spdl., comp. rest, taper and chuck.
 14 x 6 Monarch, comp. r., h. s., (2).
 14 x 6 Plather, chuck and taper att.
 14x6 American, quick change, chuck, almost new, (2).
 14x6 American quick change, chuck and taper att., almost new.
 14x8 Seneca Falls, h. s., c. r.
 16 x 6 Johnson, comp. r., h. s., (2).

16 x 8 Bradford, dbl. back gd., chuck.
 18 x 12 Lodge & Davis, compound, hollow taper and chuck.
 16 x 8 W. P. Davis, hollow spindle and chuck.
 18 x 8 Draper, c. r., hollow spindle.
 20x8 Walcott & Wood, hollow spindle.
 24 x 16 Gleason, plain rest, chuck.
 36x 22 Sellers, triple geared.
 24x 36 Fitchburg gap lathe.

TURRET LATHES & SCREW MACHINES.

No. 4 Bardons & Oliver, auto. chuck, cut off rest.
 16 in. Springfield Fox lathe.
 22 in. Bullard turret, complete.

No. 3 Pratt & W. 1 1/2 in. wire feed.
 No. 3 Pratt & W. 2 in. wire feed, (2).
 No. 3 Pratt & W. 1 1/2 in. auto. chuck.

SHAPERS.

16 in. Barker, crank.
 20 in. Hamilton.

21 in. American.

DRILLS.

10 in. Burke, bench, (3).
 14 in. Miami Valley, sensitive.
 14 in. Henry & Wright, high speed.
 6 sp. 21 in. Hoefler gang, complete.
 36 in. Baker Bros., complete.

30 in. Midland high speed radial, tapping attachment, (2).
 Gardam, multiple spindle, (2).
 Foote-Burt, multiple spindle.
 34 in. W. F. & J. Barnes, sl. hd.

PLANERS.

33 x 33 x 10 Putnam, 1 head.

48 x 48 x 20 Belmar, 4 heads.

MILLING MACHINES.

No. 2 Grand Rapids, plain.
 No. 12 Garvin, plain.

No. 20 Oesterlein, plain universal, dividing head, vertical attachment.

NUT TAPPERS AND BOLT CUTTERS.

4 in. Acme 6-spdl. nut tappers, (2).
 8 in. Acme 6-spindle nut tapper.
 2 in. Acme 3-spindle bolt cutter.

1 1/2 in. Acme single spindle bolt cutter, motor drive.

PRESSES.

No. 20 Bliss, inclinable.
 No. 46 Zoh & Hahnemann, plain.
 No. 76 Cleveland, straight side, gd.

No. 6 Garrison, geared, (2).
 No. 19 Bliss, special, stock fd., (3).
 30 in. Keene, double crank.

GRINDERS.

Thompson, univ., motor drive, (2).
 24 in. Leland, wet tool.

14 in. Vulcan, double end.
 16 in. Ransom, double disc.

MISCELLANEOUS.

Arbor press, No. 3 1/2 Greenerd.
 Broaching machine, No. 3171 Waterbury Farrell.
 Cold saw, No. 11 Higley, with gr'dr.
 Cut-off saw, 6 in. Challenge.
 Floor crane, 1 1/2 ton Franklin, new.
 Gas engine, 6 h. p. Buckeye.
 Gas engine, 10 h. p. Howe.
 Gas engine, 10 h. p. New Era.
 Gear cutter, spur, 30x8 Gould & Eberhardt, auto.
 Gear cutter, spur, Standard, automatic bench.

Generator, 12 1/2 k. w. Westinghouse, switch board.
 Generator, 60-light, Coles, d. c.
 Hack saw, Victor.
 Keyseat miller, Ingersoll.
 Magnet winding lathes, hi'h spd., (2).
 Paper splitter, gang, 40 in. Jaques.
 Pipe machine, 4 in. Oster.
 Shear, rotary slit., No. 387 Toledo.
 Shear, squaring, 37 in. Toledo, No. 11 gauge.
 Welder, acetylene, Economy, portable.

FOR SALE BY

C. H. N., - - - - 610 Baymiller St., Cincinnati, O.

A MANUFACTURING BUSINESS.

Complete patterns, working jigs, stock of finished and unfinished castings for the celebrated Maxon lever and ratchet screw jacks. Purchase includes books and good will of business of twenty years standing. Price \$1,000. This is a clean cut small proposition well worth investigating.

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